Forest Management Plan

For Crown Land
In Cambridge District

April 1, 1988 to March 31, 1993

Ontario

Ministry of Natural Resources
Ministère des Richesses naturelles

Lyn McLeod Minister/Ministre

90-00939/

ISBN 0-7729-5236-1

c 1988 Queen's Printer for Ontario
Printed in Ontario Canada

NOTE: There are Crown land properties within Cambridge District that will be managed by other MNR programs. The following properties will have separate Resource Management Plans: Bronte Creek Provincial Park, Luther Marsh Wildlife Management Area, Cranberry Bog and Stoney Creek Access Point.

Single copies of this publication are available at no charge from the address noted below.

Ministry of Natural Resources
Cambridge District Office
Beaverdale Road
Cambridge, Ontario
N3C 2W1
Telephone: (519) 658-9355

I hereby certify that this plan has been prepared under my personal supervision and that all field work and calculations have been carried out to the best of my skill and judgement.

Signed Ken A. Elliott Date June 12, 1989

K.A. Elliott, H.B.Sc.F., R.P.F.
(Forester-In-Training, Author)

As the management forester in charge of the Crown Land in Cambridge District I concur with all aspects of this plan and I agree to implement the operating plan within the given economic and social constraints.

Signed _____ Date _____

J.R. Irwin, B.Sc.F., R.P.F.
(Management Forester)

I have read the Forest Management Plan for Crown Land in Cambridge District and certify that it is consistent with other resource management plans, land use guidelines and/or policies for the area. I recommend that the plan be approved for implementation.

District Manager — Date: June 20, 1989

Regional Director — Date: Aug 9, 1989

I have read this Forest Management Plan and certify that it is consistent with other resource management plans, land use guidelines and/or policies for the area.

Forest Management Supervisor	13 June 1989 Date
Support Services Supervisor	June 13/89 Date
Fish and Wildlife Supervisor	June 27/89 Date
Lands and Minerals Supervisor	25 June 89 Date
Parks and Recreation Supervisor	89/07/04 Date

PREFACE

Crown land in Ontario is the responsibility of the Minister of Natural Resources and has been regulated by legislation and technical manuals for many years. In Southern Ontario planning is accomplished through the use of Resource Management Plans (RMP). They are usually prepared for a specific land base within a district.

A RMP states the policies, strategies and operations for a specific planning area and relates them to program objectives and targets. It provides the link between land use planning and work planning. The plan covers a five year period and combines both management and operating plans. Subsequent annual work plans will outline ongoing operations and anticipated expenditures.

A planning committee with representation from other ministry programs will ensure the integration of all key interests. Periodic meetings are utilized to state objectives, establish strategies, provide direction and approve plans. Public involvement is encouraged through displaying the draft plan, contacting local landowners, and informing interest groups.

A rigorous approval process ensures each RMP is complete, concise and without error. The District Program Supervisors, District Manager and the Regional Director must review and approve the final draft. Implementation of the plan falls primarily on the District (forester).

TABLE OF CONTENTS

Page

PREFACE v
LIST OF TABLES AND FIGURES vii
LIST OF APPENDICES viii
INTRODUCTION 1
REPORT OF PAST OPERATIONS 5
DESCRIPTION OF RESOURCES 12
OBJECTIVES AND STRATEGIES 16
PREAMBLE 16
POLICIES 16
OBJECTIVES 16
1) Forestry 16
2) Fisheries 17
3) Wildlife 18
4) Provincial Parks and Recreation 19
5) Aggregates 20
6) Land Adminstration 21
STRATEGIES 22
1) Integrated Resource Management Strategy 22
2) Public Safety Strategy 22
3) Environmental Strategy 23
4) Forestry Strategy 24
a) Allowable Cut 24
b) Silviculture 26
i) Conifer Working Group 26
ii) Tolerant Hardwood Working Group 27
iii) Soft Maple Working Group 27
iv) Hemlock Working Group 27
v) Poplar Working Group 28
c) Integration 28
5) Fisheries Strategy 28
6) Wildlife Strategy 29
7) Provincial Parks and Recreation Strategy 30
8) Aggregates Strategy 32
9) Land Administration Strategy 32
PROPOSED OPERATIONS 34
IMPLEMENTATION 36
APPENDICES 37

LIST OF TABLES AND FIGURES

		Page
Table 1.	CROWN LAND FOREST MANAGEMENT PROPERTIES IN CAMBRIDGE DISTRICT	4
Table 2.	REPORT OF PROPOSED AND ACTUAL VOLUME HARVESTED for the ten-year term from 1973 to 1983 CAMBRIDGE DISTRICT CROWN FOREST	6
Table 3.	REPORT OF IMPROVEMENT OPERATIONS for the ten-year term from 1973 to 1983 CAMBRIDGE DISTRICT CROWN FOREST	7
Table 4.	REPORT OF IMPROVEMENT OPERATIONS AS OF 1983 CAMBRIDGE DISTRICT CROWN FOREST	8
Table 5.	REPORT OF PROPOSED AND ACTUAL VOLUME HARVESTED from the CAMBRIDGE DISTRICT CROWN FOREST	10
Table 6.	REPORT OF IMPROVEMENT OPERATIONS for the four-year term from 1983 to 1987 CAMBRIDGE DISTRICT CROWN FOREST	11
Table 7.	SUMMARY OF AREA within the FOREST MANAGEMENT PLAN for CROWN LAND in CAMBRIDGE DISTRICT	13
Table 8.	SUMMARY OF ENVIRONMENTAL FEATURES BY TRACT within the FOREST MANAGEMENT PLAN for CROWN LAND in CAMBRIDGE DISTRICT	14
Table 9.	POTENTIAL ANNUAL ALLOWABLE DEPLETION for the CAMBRIDGE DISTRICT CROWN FOREST	25
Table 10.	POTENTIAL SURPLUS PROPERTIES within the FOREST MANAGEMENT PLAN for CROWN LAND in CAMBRIDGE DISTRICT	33
Table 11.	PROPOSED HARVEST AREA AND VOLUME for the five-year term from 1988 to 1993 CAMBRIDGE DISTRICT CROWN FOREST	35
Figure 1.	CAMBRIDGE DISTRICT REGIONAL SETTING	2
Figure 2.	CAMBRIDGE DISTRICT CROWN LAND TRACTS	3

LIST OF APPENDICES

		Page
APPENDIX I	LITERATURE CITED AND REFERENCES DOCUMENTING ENVIRONMENTAL RESOURCES	38
APPENDIX II	OPERATING PLAN	42
APPENDIX III	HARDWOOD STAND PRESCRIPTIONS	106
APPENDIX IV	ACTUAL CUT 1988 - 1993	110
APPENDIX V	RECORD OF IMPROVEMENT OPERATIONS 1988 - 1993	112
APPENDIX VI	DISTRICT POLICY ON RECREATIONAL USE OF AGREEMENT FORESTS AND CROWN LAND	114
APPENDIX VII	LETTER TO REGIONAL DIRECTOR REGARDING SURPLUS LANDS	120
APPENDIX VIII	INTEGRATED RESOURCE MANAGEMENT GUIDELINES PUSLINCH CROWN RESOURCE MANAGEMENT AREA	122

INTRODUCTION

Cambridge District is within the Central Region of the Ontario Ministry of Natural Resources (OMNR) (see Figure 1). This Forest Management Plan (FMP) covers 19 separate tracts, comprising approximately 732 ha of Crown land (see Figure 2 and Table 1). Most of the tracts were acquired between 1955 and 1977. An additional five tracts were acquired from the Hamilton-Wentworth Agreement Forest in 1985.

Crown land is owned by the provincial government and the areas within this plan are managed for "Forestry Purposes". These purposes include "the production of wood products, provision of proper environmental conditions for wildlife and recreation, protection against floods and erosion, and protection and production of water supplies".

The 19 tracts have been managed under three planning documents, which for various reasons never received final ministry approval:

i) CAMBRIDGE DISTRICT AGREEMENT FOREST AND CROWN LAND MANAGEMENT AND OPERATING PLAN 1973-1993

ii) CROWN LAND OPERATING PLAN 1983-1993

iii) REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH AGREEMENT FOREST OPERATING PLAN 1983-1993

The level of objective achievement from these previous plans will be evaluated and used to modify the proposals for the remaining planning period. The current management plan is to be implemented over the period from April 1, 1988 to March 31, 1993.

This management plan will state the objectives and targets and will describe the strategies necessary to attain them. The Cambridge District Land Use Guidelines (DLUG) will provide the main direction for the objectives and targets. The general policies that the ministry operates under can also be referenced in the DLUG document. The FMP will identify the portion of the Cambridge DLUG targets that can be produced from its land base. It will also include an operating plan that will describe the resources and the operations proposed to reach the identified targets.

Figure I

CAMBRIDGE DISTRICT

REGIONAL SETTING

10 0 10 30 50mi
10 0 10 20 30 40 km

N

LEGEND

MINISTRY of NATURAL RESOURCES REGIONAL BOUNDARY

MINISTRY of NATURAL RESOURCES DISTRICT BOUNDARY

CAMBRIDGE DISTRICT

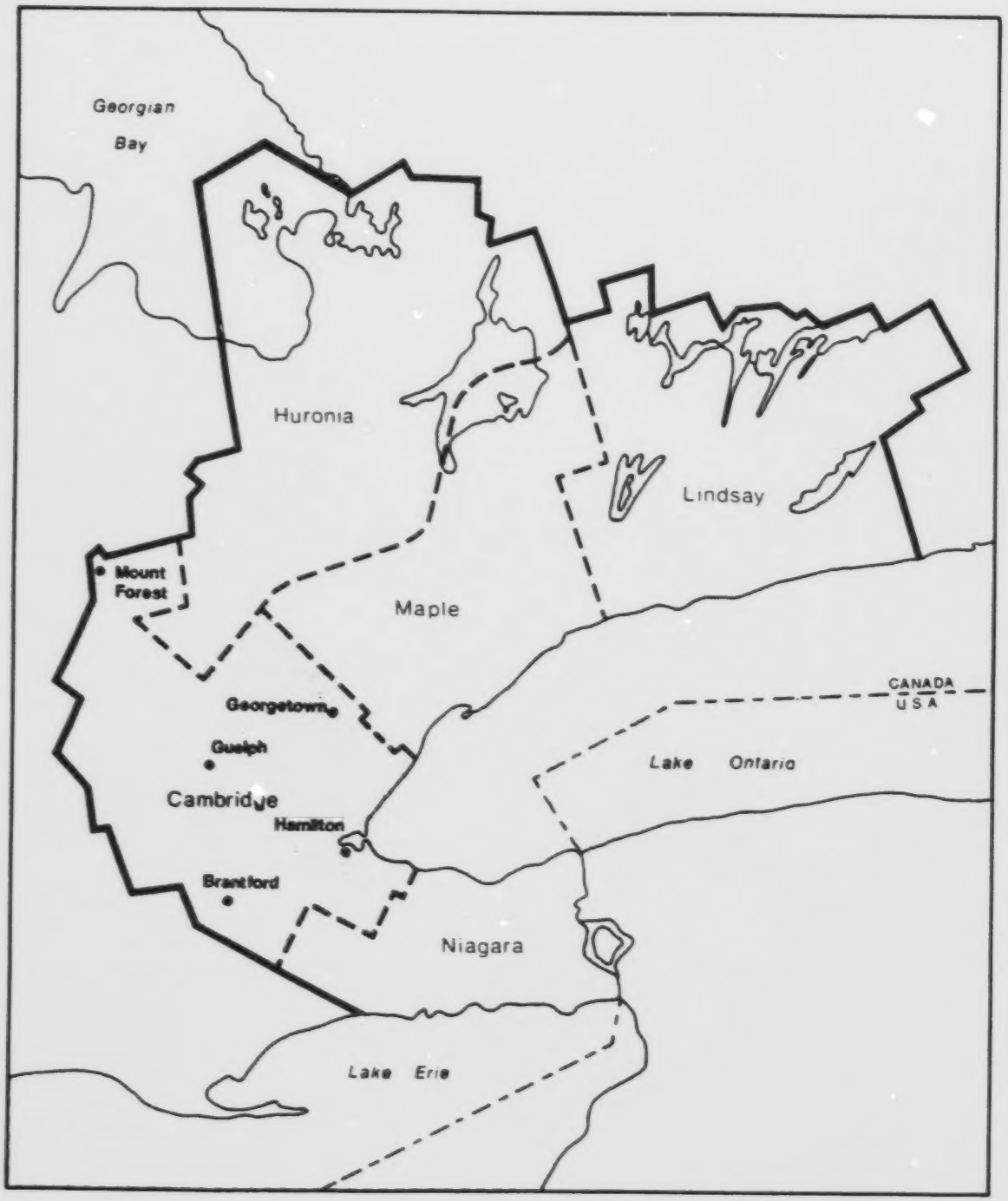
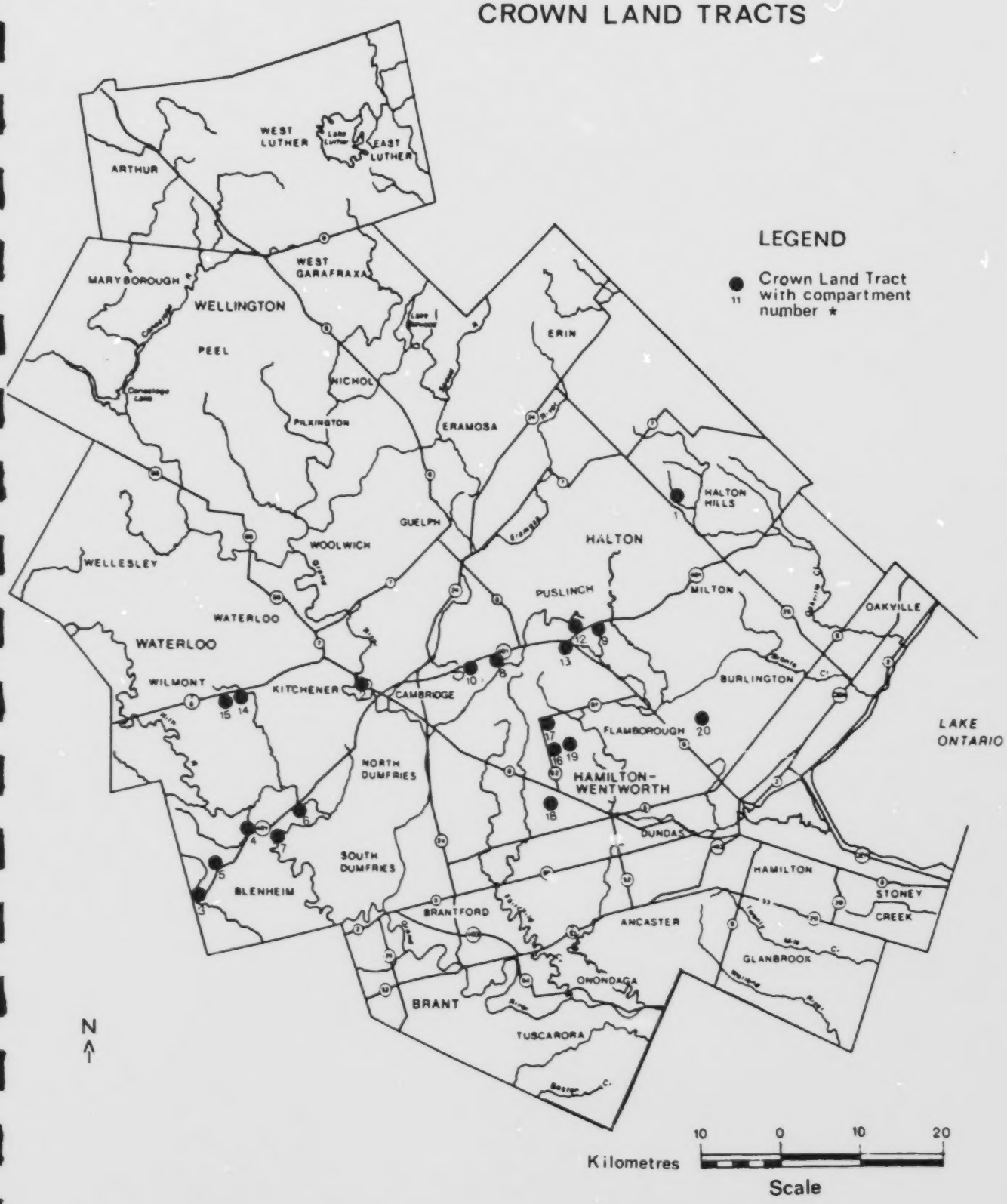


Figure 2

CAMBRIDGE DISTRICT
CROWN LAND TRACTS



* for tract name and specifications see Table 1

TABLE 1

CROWN LAND FOREST MANAGEMENT PROPERTIES
in
CAMBRIDGE DISTRICT

COMP.#	TRACT	TOWNSHIP	LOT	CON.	AREA (ha)	YEAR ACQUIRED
1	Speyside	Esquesing	Pt. 16	III	20	1955
2	Freeport	Waterloo	Pt. 13,14	B.L.B., B.F.C.	29	1963
3	Horner Creek	Blenheim	Pt. 23,24	V	25	1963
4	Black Creek	Blenheim	Pt. 10-13	IX	35	1963
5	Exchange 32	Blenheim	Pt. 18,19	VII	25	1963
6	Nith River	Blenheim	Pt. 2,3	X	30	1963
7	Wolverton	Blenheim	Pt. S1/2 7	IX	18	1963
8	Grace	Puslinch	Pt. 18	II	36	1965
9	McCrae	Puslinch	S.Pt. 33	X	8	1966
10	Puslinch	Puslinch	Pt. 3-10	II	147	1966,67
12	Francis	Puslinch	S.Pt. 30	IX	8	*
13	Morriston	Puslinch	N.Pt. 28,29	VII	53	*
14	Wilmot	Wilmot	Pt. 3-6	S.S.R.	41	1972
15	Hofstetter L.	Wilmot	Pt. 7-10	S.S.R.	19	1972
16	Hyde	Beverly	N.Pt. 19-20	VI	142	1985
17	Kirkwall	Beverly	N.W.Pt. 19	VIII	10	1985
18	Patterson	Beverly	S.Pt. 17	IV	40	1985
19	Savage	Beverly	Pt. 24	VII	29	1985
20	Newall	E. Flamboro	Pt. 5	VII	16	1985

			TOTAL		731	

* - Crown owned by the Ministry of Transportation (MTO) with resource management transferred to the MNR

REPORT OF PAST OPERATIONS

The objectives from the previous management plans are compared to the achievements during their respective terms. This information will be used to evaluate the planning process and to set realistic goals for the future period.

The objectives of the management plan for 1973 to 1993 were:

1. Provide for a continuous supply of higher quality wood and wood products on sites suited to this purpose.

2. Provide and maintain proper environmental conditions for a variety of wildlife species.

3. Provide for compatible, extensive recreational use of the forest.

4. Conserve soil and water resources through proper management of sensitive areas.

The first objective would have been achieved if both the "Proposed Cut" and "Proposed Improvement" operations were completed. In Tables 2 and 3, the actual accomplishments are compared to those that were proposed for the 1973 to 1983 operating period.

The volume of conifer harvested was more than twice the recommended cut (2549 m3 over). This "over-cut" was primarily in red pine but was also noted in all the other conifer species. An extensive die-back problem was noted in the red pine. An accelerated thinning program was initiated to utilize the wood prior to its degradation. Due to losses from shoot tip blight (Diplodia pinea/Sphaeropsis sapinea) and poor growing stock, much of the Scots pine was also liquidated. Jack pine was planted off-site and due to its poor growth was often removed.

The hardwood sawlog volume was apparently "undercut" by 85%, but when the fuelwood and sawlog volumes are added the total hardwood volume is greatly in excess of the proposed. The high demand and subsequent high prices for fuelwood during this time period encouraged many operators to sell logs as fuelwood. The market also allowed some of the tending, an improvement or cost generating operation, to be carried out as a fuelwood sale or a revenue generating operation. Prior markets would not except this "small low quality wood". This also helps to explain the over-cut in total harvest (Table 2) and the shortfall in tending (Table 3). In general, it appears that most of the harvesting was at or above the proposed levels.

TABLE 2

REPORT OF PROPOSED AND ACTUAL VOLUME HARVESTED *

for the ten-year term
from 1973 to 1983

CAMBRIDGE DISTRICT CROWN FOREST

PROPOSED CUT		ACTUAL CUT	
Working Group	Volume (m3)	Species	Volume (m3)
Red Pine	798.64	Red Pine	2399.4
Scots Pine	620.22	Scots Pine	993.1
White Pine	229.40	White Pine	471.5
Jack Pine	107.62	Jack Pine	268.2
		White Spruce	163.1
		Hemlock	9.7
Total Conifer	1755.88	Total Conifer	4305.0
Hard Maple	1025.07	Hard Maple	134.12
Soft Maple	569.17	Soft Maple	2.67
		Beech	41.25
		White Ash	19.33
		Basswood	18.44
		Red Oak	13.42
		Other Hardwoods	11.06
Total Hardwood	1594.24	Total Hardwoods	240.29
TOTAL CONIFER AND HARDWOOD	3350.12	TOTAL CONIFER AND HARDWOOD	4545.29
HARDWOOD FUELWOOD			7134.8
TOTAL HARVEST ALL TYPES			11680.09

* - NOTE: These totals include volumes from two tracts (Binbrook and Rockton) that were not acquired from the Hamilton-Wentworth Agreement Forest. The exact amounts are not known but are likely small and have little effect on the relative proportions of proposed to actual harvest volumes.

TABLE 3

REPORT OF IMPROVEMENT OPERATIONS

for the ten-year term
from 1973 to 1983

CAMBRIDGE DISTRICT CROWN FOREST

Operations	Proposed		Actual
Thinning	188.4 ha		153.08 ha
Tree Planting	42.8 ha		68.35 ha
		(replant)	76.53 ha
Pruning	5.7 ha		2.7 ha
Clipping	19.1 ha		
Road - Construction	8.5 km		13.4 km
- Mowing (spraying)	8.5 km		6.84 km
- Brushing	8.5 km		5.8 km
Fencing			545.0 m
Wildlife Shrub Planting			16,350.0 shrubs
Site Preparation	9.8 ha		
- Chemical			12.14 ha
- Mechanical			6.88 ha
Boundary Marking			12.78 km

The improvement operations conducted during the 1973-1983 decade show higher than proposed levels of accomplishment in all but area thinned, pruned, clipped and roads maintained. Most of these operations were based on "Social Programs" which did not occur. Also, a market for small sawlogs was removed through the closing of Dorwood Industries boltwood mill.

The operating plan for 1973-1983 did not summarize all the proposed physical improvements but the intent of the management plan was to "provide ... parking areas, roadside and entrance signs, information brochures, garbage containers, self guided trails, privies and picnic tables at selected locations." The extent of accomplishment can be seen in Table 4, which summarizes the improvements up to 1983. Privies were placed at the Hyde and Puslinch Tracts but were removed due to excessive vandalism. All other physical improvements have been provided.

Table 4
REPORT OF IMPROVEMENT OPERATIONS
AS OF 1983
CAMBRIDGE DISTRICT CROWN FOREST

Tract	Roads		Gates	Signs	Trails	Parking	Picnic	Fire
	Gravel	Grass			(km)	Lots	Area	Ponds
Speyside	1.3	0	2	1	0	1	0	0
Freeport	0	0	0	1	0	0	0	0
Horner Creek	0	0	0	2	0	0	0	0
Black Creek	0	0	0	1	0	0	0	0
Exchange 32	0	0	0	1	0	0	0	0
Nith River	2.3	0	1	2	0	1	0	0
Wolverton	0	0	0	1	0	0	0	0
Grace	0.4	0.4	1	1	0	1	0	0
McCrae	0	0	0	1	0	0	0	0
Puslinch	1.6	0	3	2	0	1	1	2
Francis	0	0	0	1	0	0	0	0
Morriston	0.8	0	1	1	0	0	0	0
Wilmot	1.3	0.1	1	1	0	0	0	0
Hofstetter	0	0	0	0	0	0	0	0
Hyde	3.8	0	2	2	13.9	1	1	1
Kirkwall	0	0.2	1	1	0	0	0	0
Patterson	2.3	0	1	1	0	0	0	0
Savage	0.5	0.4	1	1	0	1	0	0
Newall	0	0	0	0	0	0	0	0
Total	14.3	1.1	14	21	13.9	6	2	3

The second operating plan for the management period 1973-1993 outlines the proposed volume to be harvested from 1983-1993 (see Table 5). The actual volume harvested from 1983 to 1987 is also listed in Table 5. Only 19% of the proposed has been harvested in the first five years. Most of the operations were planned for the latter half of the decade. The present management plan will redefine the volumes for the five year period (1988-1993). Table 6 lists the improvement operations conducted in the first five years (1983-1987). From Table 4 only 7.2 km of road required maintenance (from 1983-1987) and the other facilities still exist.

In conclusion, the objective to "provide a continuing supply of higher quality wood and wood products, on sites suited to this purpose" was met in most cases. More than the proposed volume was produced from less than the proposed area. Areas with small diameter conifers did not have good markets during this time period. The clipping projects were not completed due to funding constraints and a lack of insects and disease. Generally, the forest management program conducted from 1973 to 1987 improved the quality of the hardwood stands and most of the conifer stands.

This FMP will direct the remaining five years, of the original 20 year plan. It will continue to encourage the sound management of the Crown forest.

The original objectives for wildlife, recreation and sensitive areas were not quantified and, therefore, it is difficult to quantify the achievement. Some data can be found in a recreational user survey conducted in 1981.

The wildlife objective, "provide and maintain proper environmental conditions for a variety of wildlife species", was met in part. Wider plantings were used but early thinnings to encourage shrub understories were not completed. A nectar tree grove was proposed for the Morriston tract but funding did not permit its establishment. Wildlife habitat improvement included: edge enhancement with wildlife shrubs and food crop planting. All-aged stands with diversity, den trees, food species and dense understories were developed through the hardwood marking program.

The objective to "Provide for compatible, extensive recreational use of the forest" was met through the maintenance of roads, parking lots, gates and signs. Numerous incidents of vandalism has terminated the use of privies and picnic tables at all tracts. This has not discouraged large numbers of various recreationists from utilizing most of the Crown land properties. Local populations and available leisure time are increasing and this has been exemplified through the upswing in District forest use.

The sensitive areas objective "conserve soil and water resources through proper management of sensitive areas", was met indirectly through proper forest management. Forest stand density was maintained at levels high enough to prevent erosion, prevent drastic fluctuations in water tables, and alleviate problems during spring run-off.

TABLE 5

REPORT of PROPOSED and ACTUAL VOLUME HARVESTED

from the

CAMBRIDGE DISTRICT CROWN FOREST

PROPOSED CUT from 1983 to 1993		ACTUAL CUT from 1983 to 1987	
Working Group	Volume (m3)	Species	Volume (m3)
White Pine	2117	White Pine	6.6
Red Pine	773	Scots Pine	50.0
Scots Pine	482	Other Conifer	20.0
White Spruce	326		
Hemlock	259		
European Larch	85		
White Cedar	68		
Jack Pine	68		
Total Conifer	4178	Total Conifer	76.6
Hard Maple	2314	Hard Maple	30.8
Soft Maple	708	Soft Maple	1255.7
White Ash	263	White Ash	35.3
Black Cherry	136	Black Cherry	5.1
		Poplar	20.0
		Basswood	4.8
		Beech	3.1
		Red Oak	2.3
		White Oak	0.2
		Other Hardwoods	15.2
Total Hardwood	3421	Total Hardwoods	1372.5
TOTAL CONIFER AND HARDWOOD	7599	TOTAL CONIFER AND HARDWOOD	1449.1

TABLE 6

REPORT OF IMPROVEMENT OPERATIONS

for the four-year term
from 1983 to 1987

CAMBRIDGE DISTRICT CROWN FOREST

Operations	Proposed	Actual
Thinning	198 ha	9.0 ha
Tree Planting	0 ha	8.1 ha
Pruning	0 ha	42.0 ha
Mowing	0 ha	8.0 ha
Road Maintenance	0 km	7.2 km
Fencing *	0 m	0.0 m
Trails	0 m	0.0 m
Maintenance of Gates and Signs	All	All

* - A fencing proposal was set up for the Hyde Tract but no successful bids were received and no fence has been constructed

DESCRIPTION OF RESOURCES

The area summary in Table 7 lists the forested area by working group. The working group, or predominant species by volume, was determined from the operational cruise in 1981 and some recent field checks (1988). Some harvesting has occurred since 1981 and species volumes may have slightly changed but generally the stand composition has remained constant. Therefore, these figures are sufficiently accurate to describe the existing forest resources. The 1980 Forest Resource Inventory and 1981 operational cruise generated total standing volumes calculated by species but these have not been summarized in this plan.

A list of physical improvements has been shown in Table 4. The roads and parking lots are used in forestry operations and they supplement the trail systems to facilitate recreational use. The tracts are heavily used for hiking, skiing, hunting and for educational purposes.

The biological and wildlife resources have been documented in a number of reports:

1) Cambridge District Land Use Guidelines (DLUG)
2) Areas of Natural and Scientific Interest (A.N.S.I.)
3) Prescriptions for Wildlife Management of Selected Agreement Forests in Cambridge District
4) Fish and Wildlife Management Proposals for Crown Lands
5) Environmentally Sensitive Areas (ESA) reports from various regional municipalities and counties
6) Wetland Evaluations.

A more detailed list of references appears in Appendix I.

Table 8 provides a summary of the environmental features that are located within the properties of this plan. The operating plan in Appendix II gives descriptions of the specific biological resources that are located within the individual forest stands.

The aggregate resource has only been identified at the Puslinch Crown Resource Management Area. This significant deposit is controlled by the MTO and will remain available for extraction.

TABLE 7

SUMMARY OF THE AREA

within the FOREST MANAGEMENT PLAN

for CROWN LAND in CAMBRIDGE DISTRICT

SUMMARY OF TOTAL AREA (ha)

Water		7.3
Non-Forested Land		47.0
Forested Land		
-Non-Productive Forest	9.5	
-Productive Forest	668.6	
		678.1
Total Area		732.4

SUMMARY OF PRODUCTIVE FOREST (ha)

			Production Forest				
				MAD Land Base			
Working Group	Protection Forest	B&S	PFR	Regular	Subtot	Subtot	Total
Red Pine				118.4	118.4	118.4	118.4
White Pine	6.3			100.8	100.8	100.8	107.1
Scots Pine			48.1	21.9	70.0	70.7	70.0
White Cedar	14.5			3.9	3.9	3.9	18.4
White Spruce		1.6		14.1	14.1	15.7	15.7
Other Conifer	5.5			21.2	21.2	21.2	26.7
Total Conifer	26.3	1.6	48.1	280.3	328.4	330.0	356.3
Hard Maple	2.1		4.7	88.7	93.4	93.4	95.5
Soft Maple	49.1			11.5	11.5	11.5	60.6
White Ash	31.4		12.1	9.7	21.8	21.8	53.2
White Birch	24.7			12.6	12.6	12.6	37.3
Poplar	16.3			16.9	16.9	16.9	33.2
Other Hardwood	15.0	14.7	1.7	1.1	2.8	17.5	32.5
Total Hardwood	138.6	14.7	18.5	140.5	159.0	173.7	312.3
TOTAL	164.9	16.3	66.6	420.8	487.4	503.7	668.6

TABLE 8

SUMMARY OF ENVIRONMENTAL FEATURES BY TRACT

within the FOREST MANAGEMENT PLAN for
CROWN LAND in CAMBRIDGE DISTRICT

TRACT	A.N.S.I.	E.S.A.	Wetland	C.C.S.	Rare or Endangered Species	Winter Deer Habitat	Fishery
Speyside	RL	X			W.V.W.B.		
Freeport						X	W
Horner Creek			1				W
Black Creek	RL	X	1	A		X	C
Exchange 32		X	1	A		X	
Nith River							W
Wolverton							WC
Grace			1		L.E.O.	X	
McCrae							
Puslinch	LE		1				W
Francis			7				
Morriston							
Wilmot							W
Hofstetter Lake							C
Hyde		X			C.O.		
					G.W.W.		
					R.B.N.		
Kirkwall					P.W.		
Patterson					G.C.K.		
Savage							
Newall		X	4-7				

TABLE 8 (CONTINUED)

LEGEND

A.N.S.I.	- Area of Natural and Scientific Interest
RL	- Regionally Significant Life Science
LE	- Locally Significant Earth Science
E.S.A.	- Environmentally Sensitive Areas
X	- tract overlaps E.S.A. boundaries
Wetlands	
1	- Class Number
C.C.S.	- Carolinian Canada Site
A	- Alternate

Rare or Endangered Species

Endangered	- W.V.W.B.	- West Virginia white butterfly
Regionally Uncommon	- L.E.O.	- long-eared owl
Regionally Rare	- C.O.	- chinquapin oak
Regionally Uncommon	- G.W.W.	- gold-winged warbler
Regionally Uncommon	- R.B.N.	- red-breasted nuthatch
Regionally Uncommon	- P.W.	- pine warbler
Regionally Uncommon	- G.C.K.	- golden-crowned kinglet

Winter Deer Habitat

X - tract overlaps winter deer habitat boundaries

Fishery

W	- warmwater
C	- coldwater

OBJECTIVES AND STRATEGIES

PREAMBLE

It is necessary in a forest management plan to describe the objectives of management and where possible to quantify them so that the degree of attainment of the objectives can be measured at the end of the management period. Also the contribution of the forest to the Ministry district objectives must be assessed. The strategy section of this plan describes the means by which the objectives will be met, the constraints to accomplishing the objectives, any conflicts between the objectives and the potential of the forest, any conflicts between the objectives themselves, and the means of reconciliation of these constraints and conflicts. The co-ordination of the objectives and the means of attainment constitutes the management system.

POLICIES

The Cambridge District Land Use Guidelines (DLUG) describe the general and specific policies that direct resource management in the district. The objectives and strategies sections of this FMP will refer to these policies as they directly affect the management of the district's Crown land.

OBJECTIVES

The Ministry objectives described in this section are largely obtained from the Cambridge District Land Use Guidelines. Specific objectives for the forest are derived from these broad objectives and the contribution of the forest to the achievement of the District objectives is outlined.

1.) Forestry

The Ministry objective for forestry in southern Ontario is:

- to provide for an optimum contribution to the economy by forest-based industries consistent with sound environmental practices and to provide for other uses of the forest.

The targets for forestry from the Cambridge District DLUGs are:

- to produce an annual continuous supply of 158,900 cubic metres of wood for industrial purposes by the year 2020 while maintaining the present diversity of forest products; and

- to make the maximum contribution from forest production to the achievement of the provincial energy target.

The Crown land forests comprise approximately 1.5% of the 49,100 hectares described in the Cambridge District Land Use Guidelines as "potentially available for harvesting". For the fourteen years from 1973 to 1987, the forest produced an annual yield of 937.80 cubic metres of wood or .6% of the district target and 1.3% of the present harvest of 70,000 cubic metres (Cambridge District Land Use Guidelines).

Currently, problems are being encountered in marketing thinnings of conifer wood. A proposed chip using mill in Tiverton may change the situation but until this market is secured it may be unrealistic to expect an increase in production from the conifer stands.

A realistic forestry objective for the Crown forest is:

- To maintain the current level of harvest from the Crown forest. Utilize marketing incentive fees to encourage the wood using industry to harvest and haul increased volumes of wood.

Target - To produce between 900 and 1600 cubic metres annually.

2.) Fisheries

The Ministry objective for fisheries management in southern Ontario is:

- To provide opportunities for recreation and economic benefits consistent with the maintenance of healthy fish communities.

The fisheries targets from the Cambridge District DLUGs are:

Sport Fishing - to provide 177,000 recreation opportunities;

Bait Fishing - to provide 139,000 dozen bait fish annually from natural sources; and

Provincially Rare and Endangered Species - to ensure no native fish species becomes extinct.

The Cambridge District Fisheries Management Plan (1989 - 2000) has been completed and should be referenced for details on the implementation of the fisheries program. A number of Crown land tracts are within watersheds that have been identified as important resource areas. These include the Horner Creek (Horner Creek Tract), the Grand River (Freeport Tract), and the Nith River (Nith River Tract, Wolverton Tract). Also the Puslinch Tract contains a pond which is being utilized for a "put and take" trout stocking program.

The Crown land in the District provides free public access to any fisheries opportunities that exist. These areas are also available for habitat protection and enhancement projects.

3.) Wildlife

The Ministry objective for wildlife management in southern Ontario is:

- To provide opportunities for social and economic benefits from wildlife recreation and fur harvest consistent with the maintenance of healthy populations.

The wildlife targets from the Cambridge District DLUGs are:

Hunting - to provide by the year 2000, 170,200 opportunities of hunting recreation per annum, including 19,700 opportunities of big game hunting, 120,700 opportunities of small game hunting, and 29,800 opportunities of waterfowl hunting;

Trapping - to manage populations of wild fur-bearers such that an average harvest of 33,000 pelts by the year 2000 can be achieved while maintaining the present diversity of fur species; and

Other Uses - to ensure no native wildlife species becomes extinct.

These targets are for the entire district and although no specific locations have been identified for their achievement several "important wildlife areas" overlap Crown land tracts. These include the Galt Creek Swamp (Grace Tract), the Halton Forest (Speyside Tract), the Drumbo Swamp (Black Creek Tract, Exchange 32 Tract) and the Luther Marsh (presently managed by the fish and wildlife section under the Luther Marsh Master Plan). In addition the guidelines state "... Crown land ... will become increasingly important in satisfying the demand for wildlife - related recreation ...".

The intent of wildlife staff with regard to the Crown land properties is to maintain the current level of opportunities provided from these tracts. To do so will require maintaining the availability of the tracts for wildlife-related recreation and ensuring that hunting will continue to be permitted on most tracts.

4.) Provincial Parks and Recreation

The Ministry objectives for the provincial parks system in southern Ontario are:

Protection	- to protect provincially significant elements of the natural and cultural landscape of Ontario;
Heritage Appreciation	- to provide opportunities for explorations and appreciation of the outdoor natural and cultural heritage of Ontario;
Recreation	- to provide outdoor recreation opportunities ranging from high intensity day use to low intensity back-country experiences;
Tourism	- to provide Ontario's residents and out-of-province visitors with opportunities to discover and experience the distinctive regions of the province; and
	- to provide an economic contribution through tourism

The targets for the provincial parks system in Cambridge District from the DLUGs are:

Protection

Earth Science	- to identify, select and protect provincially significant, representative and special earth science features within the District
Life Science	- to identify, select and protect provincially significant, life science features in the District
Historical Resources	- to identify, select and protect provincially significant landscape-related prehistorical and historical resources

Heritage Appreciation

- to provide opportunities for exploration and appreciation of the outdoor natural and cultural heritage of the District.

Recreation and Tourism

- provincial parks' recreation and tourism targets will be described fully in the Bronte Creek Provincial Park Management Plan Review (presently in draft form)

- no specific targets for general recreation have been set for the district.

Bronte Creek Provincial Park is one of the most heavily used parks in the province and is the only provincial park in Cambridge District. It accounts for a large percent of the heritage appreciation, recreation and tourism activities that occur within the District. Those requiring more information on the park and its work programs should refer to the previously mentioned park management plan.

The District Crown land tracts do not occur within provincially significant areas of natural and scientific interest (A.N.S.I.). A few tracts do occur within regionally significant A.N.S.I.s: Puslinch Tract (earth science), Black Creek Tract (life science) and Speyside Tract (life science). In all cases the management programs will protect and possibly enhance the identified values.

Provincially significant wetlands occur within some of the Crown land tracts. Also, a few tracts fall within the boundaries of Environmentally Sensitive Areas (E.S.A.) which are designated by the official plans of local municipal governments. These areas will be managed to conserve and perpetuate the sensitive features.

Over 700 ha of Crown land is available for public use. On most tracts uses such as hiking, cross-country skiing, hunting, horseback riding, nature study and snowmobiling are permitted. Most of the tracts can be accessed by public roads and, therefore, represent high recreation potential. Beyond recognizing the potential of the Crown land to contribute to the general recreation objective, it is not possible at the management plan level to develop a quantifiable objective, particularly since no quantified targets have been assigned at the district level.

5.) Aggregates

The Ministry objective for mineral aggregate production in southern Ontario is:

- to meet anticipated future demand with minimal disturbance to natural and cultural resources and the social environment.

The target for mineral aggregate production in Cambridge District is:

- to ensure a total cumulative supply of 608 million tonnes for the period 1982 to 2000.

This management plan recognizes the Puslinch Crown Resource Management Area as having significant potential to supply aggregate resources. Land use practices will provide the appropriate level of protection for this potential long term resource. The extraction process has been documented under an approved Environmental Assessment (EA). The exact timing of future extraction is not known and, therefore, no targets have been stated.

6.) Land Administration

The Ministry objective for land administration in southern Ontario is to facilitate the orderly development and conservation of Ontario's land and water resources. At present no land administration targets have been designated in the DLUGs. However, some District initiatives should be considered in this management planning process.

The Crown land tracts are not all able to contribute to the district program targets. The integrity of Crown land management in the district requires more complete utilization of the present land base or the disposition of under utilized properties accompanied with the acquisition of land better adapted to the resource needs (Appendix VII).

STRATEGIES

The strategies are the methods by which the policies and objectives are implemented to meet the defined targets. The Ministry's integrated resource management policy, public safety policy and environment policy will be discussed initially as policies that guide all District programs. Each specific program strategy section will also be consistent with these Ministry policies.

1.) Integrated Resource Management Strategy

To implement the policy of Integrated Resource Management, management of Crown land will:

- apply the concept of multiple use to land and water resource management, normally undertaking two or more compatible activities on the same major areas concurrently or sequentially and realizing that in some circumstances management of areas for a single purpose is necessary; and

- ensure that each program contributes, to the extent possible, to the achievement of other program objectives.

Where two or more uses are on-going on a tract of land, every precaution will be taken to protect those individuals involved in one or more uses from hazards presented by another, either by warning signs or physical separation of the user groups. In addition where incompatible activities are carried out on properties adjacent to the Crown land tracts, fencing, boundary marking, or other means will be used to protect the land and its users from potential conflict.

2.) Public Safety Strategy

The Ministry has stated as a general policy that it:

- will promote the safe pursuit of outdoor recreation and resource production activities.

As stated in the District Policy on Recreational Use, the Ministry has a duty to take "reasonable" care regarding conditions and activities on the Agreement Forest and Crown lands.

In implementing the above policy on Crown lands the Ministry will:

i. Identify by means of a sign(s) any known physical dangers (ie. deep water). Notify users that use of internal roads is at own risk.

ii. Undertake forest management operations in a safety conscious manner. Visitors (hikers, hunters) to the tract should be notified that forest management operations are in progress.

iii. Post signs advising users of the range of activities permitted and not permitted on the tract.

iv. Increase the awareness of users of the presence of other users.

In regards to forest fire emergencies, the MNR will fulfil its lead ministry role by coordinating the government's response and will support rather than replace municipal involvement.

3.) Environment Strategy

As sensitive features of the tracts are identified through the accomplishment of the district wildlife and parks and recreation objectives, these features will be identified in the operating plan and will be given consideration in the conduct of those operations normally carried out on the Crown land tracts. Developments adjacent to Crown land properties will be reviewed through the municipal planning process and recommendations made to prevent or reduce negative impacts to Crown land.

All forest management activities, as well as recreational support activities on Crown land properties are exempt from requirements of the Environmental Assessment Act. Under the terms of this exemption MNR must follow established policies and procedures for the aerial application of insecticides and herbicides while following approved guidelines for notification of the Ministry of the Environment of these spraying operations. As well, copies of the FMP must be kept on file at the District office and made available to all government agencies and the public on request. Construction projects, such as roads, will be conducted according to the "Construction and Mitigation Handbook for MNR Class E.A. Projects".

4.) Forestry Strategy

The general Ministry policies outlined in the Cambridge District Land Use Guidelines that are relevant to the forest management program on Crown land are:

Public safety - develop co-operative fire prevention and control agreements with Municipalities.

- ensure that development and harvesting activities in forested areas are designed to reduce the possibility of fire spread and eliminate potential hazards to Crown land users

Environment - manage forests to protect provincially rare and endangered animals and plants.

- prepare and implement class and individual environmental assessments where required.

- ensure that marking for selection cutting is sensitive to the ecological significance of wooded areas.

Energy - encourage the harvest of fuelwood (particularly in conjunction with cutting operations for other forest products to utilize low grade and waste material).

In order to attain the required contribution to the District timber production target the following strategy will be followed. Firstly, to determine if the forest has the potential to produce the required volume a theoretical allowable annual cut must be calculated.

a) Allowable Cut

The essence of an allowable cut calculation for a forest is to estimate the growth that occurs on the forest and to confine cutting operations to removing this annual increment thereby maintaining the base growing stock. According to the District Land Use Guidelines average growth in the district is 2-3 cubic metres per hectare per year. The productive potential is noted as 7 cubic metres per hectare per year on the best sites. For coniferous stands growth rates of 7 to 8.75 cubic metres per hectare per year should be possible through silvicultural treatments. A potential allowable cut for the forest is outlined in Table 9.

TABLE 9

POTENTIAL ANNUAL ALLOWABLE DEPLETION

CAMBRIDGE DISTRICT CROWN FOREST

Working Group	Production Forest MAD Land Base (ha)	Annual Increment Volumes (m3/ha)	Maximum Annual Allowable Depletion (m3)
Red Pine	118.4	8.0	947.2
White Pine	100.8	8.0	806.4
Scots Pine	70.0	4.8	336.0
Jack Pine	3.7	4.8	17.8
White Spruce	14.1	6.4	90.2
Hemlock	9.8	5.0	49.0
White Cedar	3.9	4.0	15.6
European Larch	3.6	8.4	30.2
Tamarack	2.4	8.4	20.2
Hard Maple	93.4	5.5	513.7
Soft Maple	11.5	5.0	57.5
White Ash	21.8	5.8	126.4
White Birch	12.6	4.8	60.5
Poplar	16.9	6.3	106.5
Yellow Birch	1.7	4.0	6.8
Black Cherry	1.1	6.0	6.6
TOTAL	485.7	AVERAGE 6.0	TOTAL 3190.6

The growth rates used are based on published reports of growth and yield, adjusted according to the local forest site conditions. Some fluctuation in the actual cut occurs because the coniferous stands are thinned on a seven to ten year interval. Hardwood stands are thinned on a ten to twelve year interval. Thinning of several stands within a given time period can cause an apparent over-cut or conversely when stands are between thinnings, an undercut may appear. Over the long term, the actual cut should approximate the allowable cut.

Additional silvicultural input will not be required to meet the harvest volume target which is approximately 50% of the allowable depletion. The poor local conifer market obstructs production and may prevent volume target achievement. A large percent of the conifer working group is growing on unsuitable sites and many of the stands have not attained economic size and quality characteristics. Secured markets are required to conduct the thinnings and stand conversions that are necessary. These concepts will be discussed in the following section dealing with the proposed silvicultural strategies and in the operating plan (Appendix II).

b) Silviculture

The Ministry has published guidelines for the management of several working groups (the White Pine (MNR 1983) and the Sugar Maple - Yellow Birch - Hemlock (MNR, 1974) working groups) and a manual for "Managing Red Pine Plantations"(MNR, 1986). These publications, along with the recently revised manual for the Management of Tolerant Hardwoods in Algonquin Provincial Park (MNR 1983) and many publications from both Ontario and the United States form the basis for the proposed silvicultural treatments. Recent work with the Ontario Institute of Pedology in Guelph has adapted U.S. site information for locally occurring soil types and tree species. This has facilitated the use of American data and silvicultural manuals as supplements to the Ontario manuals.

There are only a few major working groups which occur within the Crown Forest. The following describes these working groups and the silviculture deemed necessary to manage them.

i) Conifer Working Group

The conifer working group includes red, white, Scots and jack pines, white and Norway spruce and European larch and tamarack. The plantations which comprise this working group are generally managed as even-aged stands. Periodic thinnings are conducted to maximize stand growth, establish regeneration, adjust species composition and improve tree quality. White pine, red pine, spruce and larch are favoured over Scots and jack pine. A number of genetic and environmental reasons prevent Scots and jack pine from attaining reasonable growth and form characteristics. Red pine and white pine (in a few cases) have also been noted to demonstrate reduced growth and die-back, 20-30 years after establishment, on highly eroded sites. Most conifer plantations are developing into stands resembling shelterwoods. The even-aged conifer overstories are sheltering regeneration of sugar maple, white ash and other hardwoods. Artificial seeding and planting can also be used to further this regeneration. Generally, the hardwood

regeneration makes it difficult to establish a second crop of conifer. The die-back problems on eroded sites discourage regenerating pine. For these reasons the conifer stands will be allowed to revert or will be converted to hardwoods in the next rotation. This is consistent with the objectives of the district to produce valuable high quality hardwoods for the furniture industry (Cambridge DLUG). Conifers will only be re-established on sites where site analysis shows they are the preferred species.

ii) Tolerant Hardwood Working Group

The tolerant hardwood working group including sugar maple, ash, cherry, basswood and beech is managed under the all-aged or selection silvicultural system. When applying this system, periodic harvest cuts are made at eight to twelve year intervals. Each cut produces regeneration from seed of the original stand. The resulting range of age and size classes facilitate a perpetual periodic harvest. Residual stocking or the amount of the stand retained after cutting is closely controlled to regulate the nature of the regeneration, the quality of the developing stand and overall stand growth.

iii) Soft Maple Working Group

Soft maple is generally found on imperfectly to poorly drained rich bottomlands. It is intolerant to shade and requires a group-shelterwood or group-selection type of harvest. This will provide enough light to create dense, even-aged groupings of regeneration that encourage good growth and form characteristics.

iv) Hemlock Working Group

The hemlock working group is found only in the Grace Tract. Hemlock is a very shade tolerant species that often grows to over 200 years of age. Its dense canopies provide excellent winter deer habitat. Uniform shelterwoods or selection systems can be utilized to maintain hemlock. Initial thinnings should maintain stocking levels high enough to discriminate against tolerant hardwood growth.

v) Poplar Working Group

Poplar is capable of growing on many different sites but is intolerant of shade. The local tolerant hardwoods usually "out compete" poplar on the better sites leaving the poplar to colonize wet or disturbed sites. The understories often regenerate to tolerant hardwoods which in most cases are considered more desirable. For this reason most poplar stands are converted or left to revert to hardwoods.

c) Integration

Forestry operations will be integrated to consider the requirements of other ministry programs. Following an inspection of Crown land tracts (Irwin-Tilt,1981) a document entitled "Fish and Wildlife Management Proposals For Crown Lands" was drawn up. The proposals were considered during the preparation of this FMP. Another report, "Prescriptions for Wildlife Management of Selected Agreement Forests in Cambridge District MNR" (Coulson, 1983), includes documentation on a few of the Crown land tracts (Hyde and Patterson Tracts) and will be consulted during the implementation stages of the current operating plan. Similarly wildlife values such as den trees, snags, mast species and other habitat values will be a consideration in forestry programs. Forestry staff will also co-operate should additional wildlife projects be proposed by fish and wildlife staff.

At times, forestry operations may temporarily affect the ecology and aesthetics of certain areas. The selection of a particular harvesting season or method of operation may be required to accommodate concerns, such as deer wintering areas. This will reduce the impact on the wildlife and the other sensitive features of the tracts. Also in regards to aesthetics, a certain level of tolerance must be encouraged immediately following harvesting operations. Those viewing recently harvested sites should be informed of the silvicultural and aesthetic values of a managed forest and that the apparent initial "destruction" will soon flourish with new growth.

Regarding public safety, forestry operations will be conducted in a manner which reduces risk to other users of the Crown land either by separating the various user groups or providing signs that warn of ongoing operations.

5.) Fisheries Strategy

The Cambridge District Fisheries Management Plan (1988), for the period 1989 to 2000, describes the fisheries strategy and its implementation schedule. In general, the Crown land tracts which have some significance to the fisheries plan include sections of important waterways. They provide access points and can be used for enhancement projects.

The spring trout stocking of the pond in the Puslinch Crown Resource Area will provide recreational fishing opportunities for the public.

6.) Wildlife Strategy

The general Ministry policies outlined in the Cambridge District Land Use Guidelines that are relevant to the wildlife management program on Crown land are:

Public safety
- promote the hunter education program.
- enforce hunting regulations.

Environment
- identify and protect the habitat of rare and endangered wildlife species;

- prepare and implement class and individual environmental prescriptions that enhance wildlife habitat.

By these means, this plan will ensure that the wildlife objective is met and that wildlife values are given consideration in other Crown land operations. Wildlife staff will also continue the program of wetland evaluations and wildlife inventories, if required, to increase the data available on the wildlife resources of the tracts.

All tracts are presently available for wildlife viewing and hunting purposes (firearms are not permitted in the Freeport Tract).

In 1986, wild turkeys were released in the Cambridge district by the ministry as part of a program to re-establish this species in southern Ontario. Some Crown land tracts may be selected as future release sites for this species.

Control of nuisance beaver will be required where beaver activity conflicts with management objectives (i.e. flooding of timber).

Several suggestions have been made (Tilt, 1981; Coulson, 1983) to enhance the wildlife potential of the tracts. These suggestions are incorporated into the operating plan, Appendix II. Where wildlife recommendations cannot be followed due to operational or other constraints affecting forestry operations, these have been noted in the operating plan. Where the potential for habitat improvement is identified in the operating plan, the opportunity exists to achieve this work through public involvement programs.

Wildlife management proposals, such as those by Tilt (1981), and specific wildlife management plans, such as one by Kellar (1979) for habitat enhancement at the McCrae Tract, can be utilized to implement field operations. Presently very little funding is available for this type of work but occasionally the Community Wildlife Involvement Program (C.W.I.P.) will encourage local interest groups to volunteer time to complete one of these projects. When drafting a project proposal for one of the tracts, the existing management documents should be referenced.

Forest management will ask wildlife staff to provide habitat protection and enhancement guidelines prior to the beginning of operations. They will consider the needs of game and non-game species. Careful consideration will be given to special habitats such as deer wintering areas.

7.) Provincial Parks and Recreation Strategies

The Bronte Creek Provincial Park Management Plan Review will describe the strategies required to implement all the objectives and policies related to the park including recreation.

A District policy has been developed for the Recreational Use of Agreement Forests and Crown Land and this appears in Appendix VI.

From the Cambridge District Land Use Guidelines, general recreation strategies have been developed to contribute to the general Ministry policies :

Environment - record known locations of provincially rare and endangered species of plants and take appropriate action for their protection.
In addition:

- District staff will provide and encourage a wide variety of outdoor recreation opportunities on Crown lands.

One of the Crown land tracts occurs in an area identified as having habitat suitable for the endangered West Virginia white butterfly. The presence of this species and the impact of operations will be determined prior to conducting work on the tract.

Other rare species have been identified on some of the Crown land tracts. The appropriate experts and management guidelines will be consulted prior to beginning operations. Planning will aim at minimizing negative impacts and enhancing and protecting the habitat needs of these species.

The tracts will be open to hikers, skiers, school groups etc. and to facilitate use by these individuals, parking lots, gates and signs will be maintained. A limited maintenance program will be applied to internal roads as these are usually only repaired to conduct forestry operations. Snowmobiling is the only motorized recreational use that is permitted. No intensive recreational projects to facilitate picnicking such as privies or picnic tables are planned at this time.

The general recreation strategy is to be integrated;

- parks staff will provide technical advice and assistance to other programs in the planning and operation of recreation facilities on lands managed primarily for purposes other than recreation.

- a review of current recreational development and of the recreation potential of Crown land properties may be undertaken.

In reviewing requests for permission for trail development on Crown lands the Ministry will consider:

- the existing use of the property, including established trails
- the potential impacts on fisheries, wildlife, forestry and natural and scientific areas
- planned uses of the property; and
- existing user groups and potential user conflicts

The most significant constraint to the general recreation program is funding. Only minimal funds are allocated to this program. Public safety must also be a consideration in the provision of recreational opportunities and the most serious problems occur when other activities are being conducted while recreationists use the tracts. Despite the fact that it is becoming increasingly more difficult to separate one user group from another it must be a priority that funds and resources be allocated to ensure that the recreational users of the tracts are aware of the dangers presented by other Crown land activities.

A district map with corresponding text has been published to promote recreational use of the tracts and to advise users of the forest's purpose and the many other values associated with Crown land.

Heavy recreational use has the potential to damage wildlife and forestry values. If this conflict occurs, recreational use may have to be regulated or segregated on a tract basis. Signs describing land use restrictions have been posted at the access points for most of the tracts.

A constraint on the provision of recreational facilities on these tracts is the use of the properties by commercial operators. Extensive over-use of the tracts by recreational vehicles and horses can cause severe environmental and physical damage to the tracts and their facilities and this use may have to be restricted.

8.) Aggregates Strategy

The Puslinch Crown Resource Management Area is the only Crown property that has been identified as an important aggregate area. The extent and nature of extractive operations are defined by an approved Environmental Assessment (EA). Extraction of aggregates will be permitted following appropriate consultation with the municipality and with MTO through the Puslinch Technical Advisory Committee.

9.) Land Administration Strategy

The Cambridge District Land Use Guidelines mention the following responsibilities and strategies are to be carried out in the management of the district Crown lands:

- provide for the use, management and perpetuation of natural resource benefits
- acquisition and disposition of Crown land

A number of factors, including accessibility and size, limit the use of certain Crown properties. The problems that reduce the importance of these tracts should be rectified or the land could be considered surplus. The surplus tracts could be disposed to agencies* or individuals who are better suited to utilizing and conserving the resources in their present state. Simultaneously, lands that have environmental qualities that would be best conserved under public land ownership could be acquired.

The potential surplus properties listed in Table 10 have been identified based on accessibility, size and special factors.

* NOTE: Any lands declared surplus by the MNR will normally be offered first to public agencies by the Ministry of Government Services.

TABLE 10

POTENTIAL SURPLUS PROPERTIES

within the

FOREST MANAGEMENT PLAN for CROWN LAND
in CAMBRIDGE DISTRICT

TRACT INFORMATION	NOTES
Freeport Tract No Access Area 29.1 ha	- is part of an important deer wintering area - has no identified significant features - has a poorly developed open forest and an extensive open floodplain - is within Kitchener's city limits - has received recent development pressure
Newall Tract No Access Area 16.2 ha	- falls within the Hamilton-Wentworth E.S.A. #37 - is mainly a small, poor quality, lowland hardwood stand - Class 4-7 wetlands
McCrae Tract No Access Area 8.5 ha	- is extremely tiny for active management - forest cover is all within small areas and of below average stocking and quality - adjacent to a Class 1 wetland
Hofstetter Lake Tract No Access Area 18.6 ha	- has an excellent hardwood stand - the tract is generally small and an awkward shape to opera in - a coldwater stream is the only identified significant feature
Francis Tract Has Access Area 8.1 ha	- is extremely tiny for active management - except for the small plantations the tract is mainly composed of unproductive Class 7 wetlands
TOTAL PROPOSED SURPLUS AREA	80.5 ha

NOTE: Alternative public ownership would continue to allow many of the district wildlife and recreation objectives to be met.

PROPOSED OPERATIONS

The proposed operations, tract maps, stand descriptions (and harvest volumes) are included in Appendix II. The areas proposed for harvest and their anticipated volumes are listed in Table 11. The volume calculations were based on the most recent available stand data (usually 1988 field survey) and are on file in the Cambridge District office. Prescriptions for the hardwood stands are described in Appendix III. In general, conifer thinnings will leave residual stocking levels (Basal Area (BA)) of 23 to 28 metres squared per hectare (m2/ha). Usually some form of row thinning will be utilized to create access and improve growing space. Subsequent selective thinning will remove poorly formed trees. The species retained is dependent on site suitability and markets. Some of these generalizations may be altered if product demand requires a specific diameter, age or height class and the harvesting of such is considered a viable management decision.

In order of significance, the stands will be regenerated by i) natural means, ii) artificial seeding, and iii) planting. Generally, large scale plantings will not be necessary but stocking levels may be improved through refills and underplanting.

Roads will be maintained to facilitate logging operations and a new road should be built to access one of the proposed harvest stands in the Savage Tract. Gates, parking lots and signs will be maintained to provide access for recreational use. Fences are maintained in co-operation with the neighbours.

The trout stocking program at the Puslinch Resource Management Area will continue. No other detailed recreational or educational projects, including additional recreational trails, are planned at the present time.

The five-year operating plan appears in Appendices II, III, IV and V. These sections describe the current status of the tracts and stands, the proposed operations, the silvicultural prescriptions, expected harvest volumes (summarized in Table 11 of the management plan) and provide tables on which to record those operations as they are carried out during the period. The year or season of proposed operations has not been indicated but will be addressed in the annual plans. These factors tend to be influenced by market conditions, silvicultural factors, and environmental concerns.

TABLE 11
PROPOSED HARVEST AREA AND VOLUME
for the five-year term from 1988 to 1993
CAMBRIDGE DISTRICT CROWN FOREST

WORKING GROUP	ALLOCATED AREA (Ha)	VOLUME (GT m3) BY SPECIES																	
		CONIFER										HARDWOOD							
		Pr	Pw	Ps	Pj	Sw	Sn	Le	Ne	Oc	Subtotal	Mh	Ms	Be	Aw	Or	Po	Oh	Subtotal	TOTAL
White Pine *	21.0	264.5	830.9	209.6	62.9	298.9	712.5				2379.3								0.0	2379.3
White Pine	25.4	264.5	845.0	277.2	62.9	313.0	712.5				2475.1								0.0	2475.1
Red Pine *	15.1	705.4		126.2			327.4				1159.0								0.0	1159.0
Red Pine	16.3	766.7		142.0	26.3		327.4				1262.4								0.0	1262.4
Scots Pine *	17.5	112.2	255.5	1087.8						112.2	1567.7								0.0	1567.7
Scots Pine	19.1	112.2	255.5	1114.4						112.2	1594.3								0.0	1594.3
White Spruce	3.0					109.2		109.2		54.6	273.0								0.0	273.0
European Larch	1.7	101.3				7.2		16.7			125.2								0.0	125.2
Subtotal Conifer *	58.3	1183.4	1086.4	1423.6	62.9	415.3	1039.9	125.9	0.0	166.8	5504.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5504.2
Subtotal Conifer	65.5	1244.7	1100.5	1533.6	89.2	429.4	1039.9	125.9	0.0	166.8	5730.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5730.0
Hard Maple	44.6								60.6		60.6	992.4	4.5	204.9	46.1			176.4	1424.3	1484.9
Red Oak	2.5										0.0			14.4	43.3	43.3	28.9	14.4	144.3	144.3
Soft Maple	0.8										0.0	10.5	94.6						105.1	105.1
Poplar	2.8																180.6		180.6	180.6
Subtotal Hardwood	50.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.6	0.0	60.6	1002.9	99.1	219.3	89.4	43.3	209.5	190.8	1854.3	1914.9
TOTAL *	109.0	1183.4	1086.4	1423.6	62.9	415.3	1039.9	125.9	60.6	166.8	5564.8	1002.9	99.1	219.3	89.4	43.3	209.5	190.8	1854.3	7419.1
TOTAL	116.2	1244.7	1100.5	1533.6	0.0	429.4	1039.9	125.9	60.6	166.8	5790.6	1002.9	99.1	219.3	89.4	43.3	209.5	190.8	1854.3	7644.9

* not including option harvest stands

IMPLEMENTATION

The Ministry forester has the primary responsibility for implementation of the management plan. Likewise the forester is responsible for any revisions or updating that is required, although this will normally be done at five year intervals. Similarly it is the forester's responsibility to implement the operating plan.

Other Ministry program staff may review the annual work proposals. However, in the past, a review of and input into the management and operating plan proposals has been sufficient to meet their requirements.

Changes to policy or tract use, such as hunting issues may cause significant changes to the management plan objectives, strategies or operating plan and may necessitate an addendum or a revision to the plan.

APPENDICES

APPENDIX I

LITERATURE CITED

AND

REFERENCES DOCUMENTING ENVIRONMENTAL RESOURCES

APPENDIX I

LITERATURE CITED

AND

REFERENCES DOCUMENTING ENVIRONMENTAL RESOURCES

Bruce, D.S. and C.J. Heeney. 1974. A silvicultural guide to the hard maple, yellow birch and hemlock working group in Ontario. For. Mgmt. Br. Div. For., Min. Nat. Res.

Chapman, L.E., D.F. Putnam. 1984. The physiography of southern Ontario. Ont. Geol. Suv. Special Vol. 2, Ont. Min. Nat. Res.

Coleman, D.J. et al. 1976. Environmentally sensitive areas study. Ecologistics Limited, Hamilton-Wentworth Region.

Coulson, D.P. 1983. Prescriptions for wildlife management of selected Agreement Forests in Cambridge District. Ont. Min. Nat. Res., Unpublished report.

Ertel, P. and R. Tapley 1987. Fire plan Cambridge District. Ont. Min. Nat. Res., Unpublished report.

Francis, G.R. and P.F. Eagles. 1975. A study of the environmentally sensitive areas for the Environmental Policy Plan of the Regional Municipality of Waterloo. Dept. of Man-Environment Stud., Univ. of Waterloo.

Gosselin, C. and K. Dunster. 1986. Towards a management strategy for environmentally sensitive areas in the Regional Municipality of Waterloo., Reg. Mun. Waterloo.

Hilts, S. 1976. Significant natural areas in Oxford County: A preliminary survey. Dept. Geogr., Univ. Western Ont.

Identification Subcommittee of Carolinian, Canada. 1985. Critical unprotected natural areas in the Carolinian Life Zone of Canada. Nature Conservancy of Can., Ont. Heritage Foundation, World Wildlife Fund.

Irwin, J.R. 1982. Crown land operating plan 1983-1993. Ont. Min. Nat. Res. (unpublished)

Irwin, J.R. 1982. Regional Municipality of Hamilton-Wentworth Agreement Forest operating plan 1983-1993. Ont. Min. Nat. Res. (unpublished)

Irwin, J.R. 1987. Forest management plan - County of Brant Agreement Forest. Ont. Min. Nat. Res.

Irwin, J.R. 1987. Forest management plan - Regional Municipality of Waterloo Agreement Forest. Ont. Min. Nat. Res.

Kellar, T. 1979. Fish and wildlife proposals for the McCrae Tract. Ont. Min. Nat. Res., Cambridge Dist., Memorandum (unpublished).

Love, D.V., A.F. Beckwith and Z.J.R. Morawski. 1972. Studies of land productivity for hardwoods in southern Ontario., Can. Land Inventory Program - ARDA.

Mathews, A.G. 1978. Cambridge District Agreement Forest and Crown land management and operating plan 1973-1993. Ont. Min. Nat. Res. (unpublished)

Nolan, J.D. 1986. Minutes of committee meeting- Management planning in southern Ontario. Ont. Min. Nat. Res., Memorandum (unpublished).

Ontario Ministry of Natural Resources. 1983. A silvicultural guide to the white pine working group.

_____ 1983. Cambridge District land use guidelines. (including 1:50 000 maps), Cambridge District.

_____ 1983. Implementation strategy : Areas of natural and scientific interest. Parks and Rec. Br., Queen's Park, Draft report.

_____ 1983. Management of tolerant hardwoods in Algonquin Park.

_____ 1983. Regional and local earth science areas of natural and scientific interest in Cambridge District. Parks and Rec. Br., Cent. Reg.

_____ 1984. Construction and mitigation handbook for MNR Class EA projects. Policy and Planning Secretariat.

_____ 1986. A framework for resource management planning in MNR. Policy and Planning Secretariat.

_____ 1986. Managing red pine plantations.

_____ 1988. Bronte Creek Provincial Park management plan review - Background information and issues and options. Draft report.

_____ 1988. Cambridge District fisheries management plan: 1988 - 2000. Draft report.

_____/Ministry of Transportation and Communications 1980. An environmental assessment for the Puslinch Crown Resource Management Area, Approved under the Environmental Assessment Act.

Regional Municipality of Halton. 1982. Ownership and access study of environmentally sensitive areas in Halton Region.

Regional Municipality of Waterloo. 1985. Environmentally sensitive areas. Technical appendix.

Stroempl, G. 1987. Growth and quality of red oak planted in a jack pine plantation. Ont. Min. Nat. Res., For. Res. Note No. 44.

Stroempl, G. 1987. Growth and quality of red oak planted in red pine plantation openings. Ont. Min. Nat. Res., For. Res. Rep. No. 117.

Tilt, N. 1981. Fish and wildlife management proposals for Crown land. Ont. Min. Nat. Res., Cambridge Dist., Memorandum (unpublished).

APPENDIX II

OPERATING PLAN

Tract Maps*
Stand Descriptions
Proposed Operations

NOTE: These maps may not be exactly to scale. The aerial photographs should be used for future area determinations.

APPENDIX II

SPECIES LEGEND

He	Hemlock	Bw	White Birch
La	Tamarack	Be	Beech
Cr	Red Cedar	Bd	Basswood
Ce	White Cedar	Aw	White Ash
Sn	Norway Spruce	Ab	Black Ash
Pw	White Pine	Cb	Black Cherry
Pr	Red Pine	By	Yellow Birch
Ps	Scots Pine	Po	Poplar
Pj	Jack Pine	Lb	Black Locust
Sw	White Spruce	OH	Other Hardwoods
Le	European Larch	Wb	Black Walnut
OC	Other Conifers	Ew	Elm
Mh	Hard Maple	Wi	Willow
Ms	Soft Maple	Ale	European Alder
Or	Red Oak	Hi	Hickory
Ow	White Oak	Id	Ironwood
Ob	Black Oak or Bur Oak		

Mfbm - Thousands of board feet
cu.m - Cubic metres
B-S - Barren Scattered UCL - Unclassified

MAP LEGEND

Species subscripts x 10 = species composition of the stand in %

External Roads ═══

Forest Access Roads ═ ═ ═ or — — —

Stand Boundary ——··——

Parking Lot Ⓟ

Note: Stand ages given for plantations only in the stand descriptions.

PFR - Production Forest Reserve: Production forest stands (site class X,1,2, and 3) which in the opinion of photointerpreters may constitute a logging or silvicultural problem (Modified FRI).

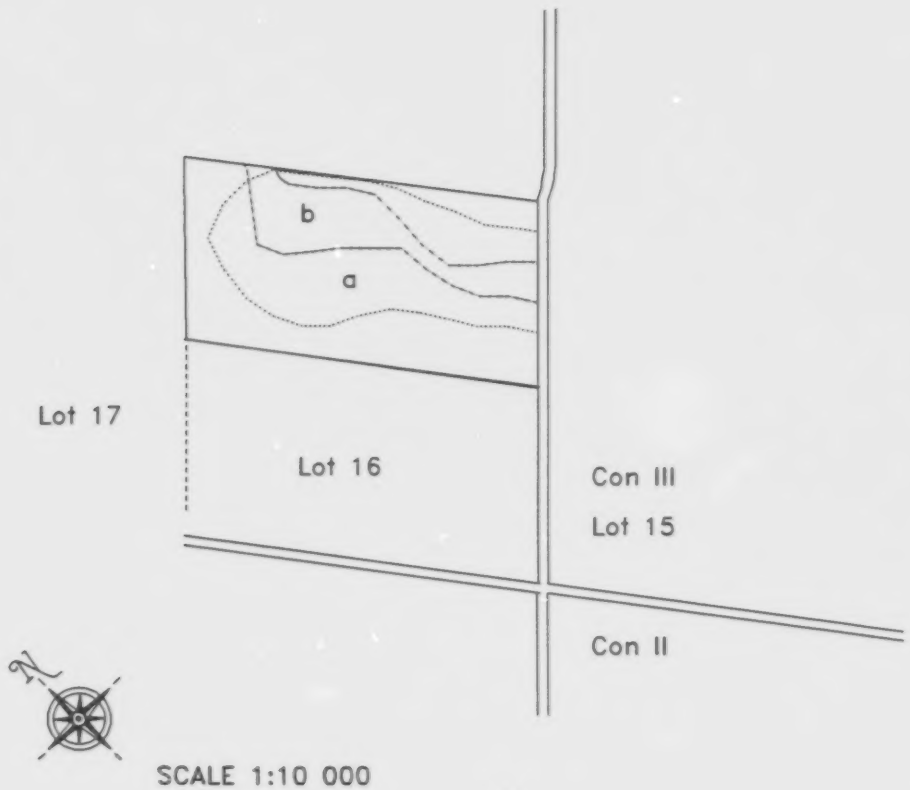
PF - Protection Forest: All productive forest land managed primarily to exert beneficial influence on soil, water, landscape, or for any other purpose when production of merchantable timber, if any is incidental (Modified FRI).

SPEYSIDE TRACT

CROWN LAND Compartment 1

Pt. Lot 16, Con. III
Esquesing Township
Halton Region
20.2 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	Mh8 Aw1 OH1	16.3
b	Ce3 He2 Ms2 Aw2 OH1	3.9



SCALE 1:10 000

SPEYSIDE TRACT

The Speyside Tract is located within a Regionally Significant Life Science Area of Natural and Scientific Interest (A.N.S.I.) and it is also within a municipally designated Environmentally Sensitive Area (E.S.A.) (Halton #29). The designation results from the significant flora and fauna that exist due its location on the Niagara Escarpment.

The tract contains habitat suitable for the endangered West Virginia white butterfly. It is also located within this butterfly's known range and sightings have been made in the surrounding area.

There is a parking lot and a 1.3 km gravel road loop. The property is used extensively by recreationists.

This is the only Crown property in the District that has remained strictly Crown owned throughout its history.

A small portion of the tract, near the north entrance, has been leased to Hornby Apiaries by a Land Use Permit (L.U.P.) under the Public Lands Act.

NOTE:Operations will not be conducted until concerns for the West Virginia white butterfly's habitat have been properly addressed.

	Stand Type	Stand Description
a)	Mh8 Aw1 OH1 Uneven Aged 16.3 ha	- a managed hardwood stand that was marked and cut for sawlogs and fuelwood in 1977 - the overstory has not responded to the release, and therefore, is slightly understocked in the larger sawtimber size classes - the shallow, rocky, escarpment soils may be the limiting factor - the increased light has permitted dense seedling and sapling growth - the polewood component is understocked - a small portion of pine/larch plantation is present in the east corner of this stand

Proposed Operations:

The selective removal of the poor quality, small to medium size, sawlogs will maintain the understory growth and improve the quality of the overstory. The residual basal area should be maintained at approximately 15 m2/ha. Some mast producing trees should be retained for wildlife forage.

b) Ce3 He2 Ms2 Aw2 OH1
Uneven Aged
3.9 ha

- a wetland site with moving water - there is a small area with large mature silver maple and no regeneration

Proposed Operations:

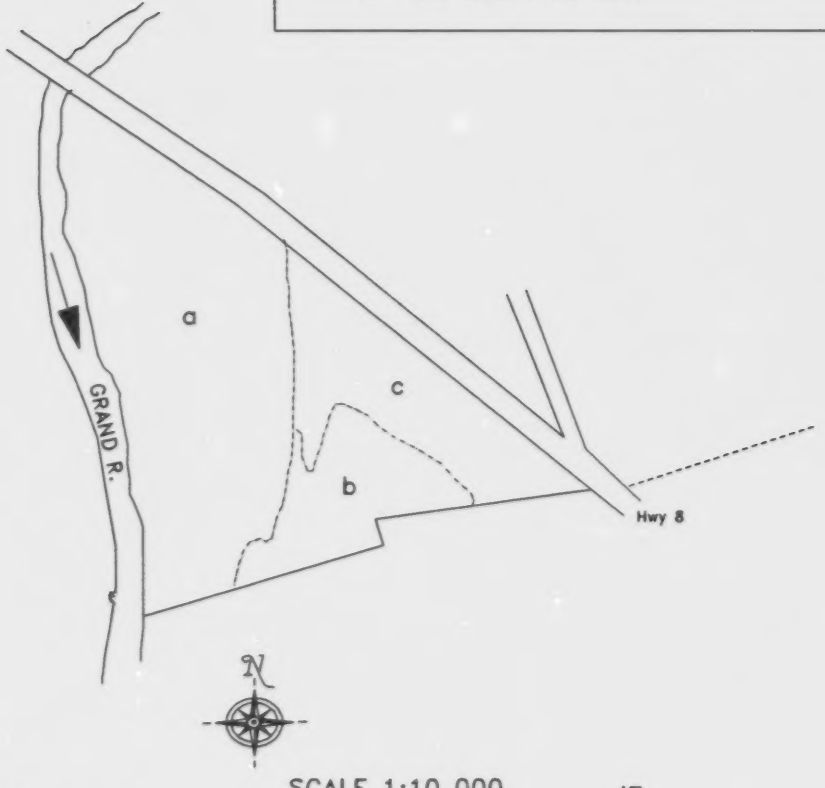
To maintain the silver maple component, on 0.8 hectares of this stand, a group shelterwood system of management should be utilized. A seeding cut should remove approximately half the basal area (leaving a residual BA of approx. 18.5 m2/ha) in 1/10 to 1/5 hectare openings. This will provide the light that is required to regenerate this shade intolerant species. Clumps that are kept as the residual stand should be those individuals most windfirm and likely to produce seed. Many of the large diameter trees will be retained. Wet conditions will restrict the timing of the harvest.

FREEPORT TRACT

CROWN LAND Compartment 2

Pt.Lot 13,14 B.L.B.,B.F.C.
Waterloo Township
Waterloo Region
29.1 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	Flood Plain	17.4
b	P.F. Ce3 Aw3 OH2 OC2	5.6
c	Pr4 Sw3 Pw2 Aw1	6.1



SCALE 1:10 000

FREEPORT TRACT

Due to recent development pressure (Mannheim Master Water Supply Project) the future land use plans for the Freeport Tract and its surrounding area are uncertain.

The property consists of a floodplain meadow, a conifer plantation and a section of natural woodlot.

Formal access (ie. an easement) is required to permit future forest management operations.

The tract is part of an identified deer wintering area and the adjacent Grand River represents a warmwater fishery. Many excellent wildlife viewing, fishing and hunting opportunities exist. The tract is within the City of Kitchener and city by-laws prohibit the discharge of firearms. Only bow hunting is permitted on this property.

The area is used quite extensively for hiking, horseback riding, snowmobiling and other recreational activities.

Stand Type		Stand Description
a)	Flood Plain 17.4 ha	- an open meadow with grass as the main vegetation cover- often covered by water during spring flood season - scattered willow along the river bank - area was previously leased for pasture under a L.U.P.
b)	P.F. Ce3 Aw3 OH2 OC2 Uneven Aged 5.7 ha	- a small area of hillside and lowerslope woodlands - the stand protects the hillside springs and a wetland area
c)	Pr4 Sw3 Pw2 Aw1 Age - 21 years 6.1 ha	- a conifer plantation with many openings - a number of refill plantings and prunings have occurred - Pr has poor form due to shootmoth damage - a new ditch along Highway 8 drains into the east-central portion of the stand; during the installation of the Freeport Watermain and the Highway 8 reconstruction a large amount of silt and clay -laden water was flushed into the plantation - this has left a deep layer of the silt and clay parent material over the roots of the white pine that are growing in this area- these trees have turned chlorotic and may die

Proposed Operations: None

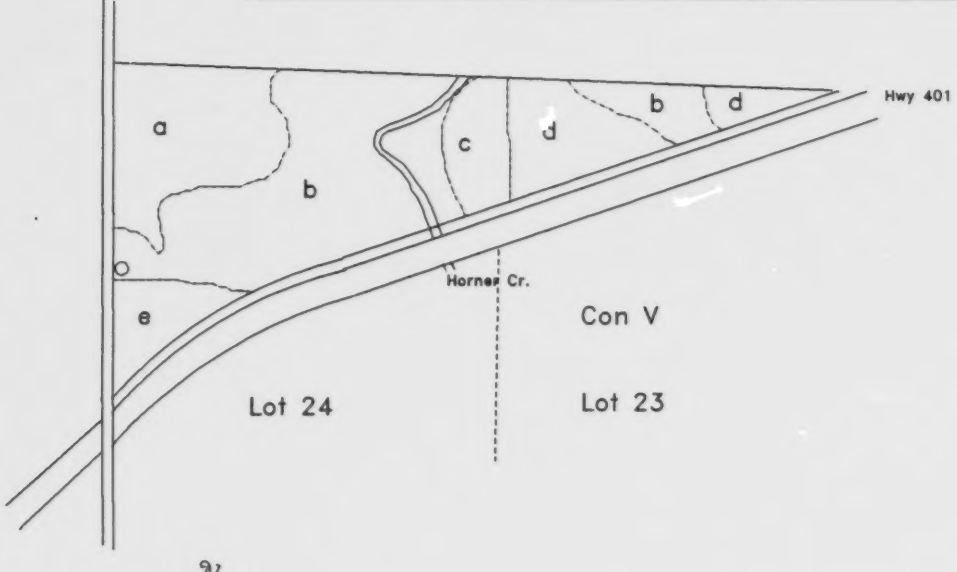
Operations will not be conducted until future land use plans are settled and access is secured.

HORNER CREEK TRACT

CROWN LAND Compartment 3

Pt.Lots 23,24, Con. V
Blenheim Township
Oxford County
25.1 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	Pr8 Le2	5.8
b	PFR Aw8 Ms1 Po1	12.1
c	Mh8 Be2	2.0
d	Pw6 Wb3 Sw1	3.5
e	B&S Sw8 Pw1 Le1	1.7



SCALE 1:10 000

HORNER CREEK TRACT

The Horner Creek Tract is composed of a lowland, hardwood woodlot intermixed, on the higher ground, with pine plantations.

Most of Stand b and parts of Stands d and e are within the boundaries of a Class 1 Wetland. A section of the Horner Creek which transects the central portion of the property is considered a warmwater stream.

The creek isolates the east end of the property and there is no road system within the tract. The property can be entered from County Road 22 which runs along the western boundary.

Stand Type		Stand Description
a)	Pr8 Le2 Age - 19 years 5.8 ha	- young healthy pine plantation that is 60 to 70% stocked- due in part to wide initial spacing (2.4 x 2.4 m) - large openings towards east and north sections - a few Wb to the north require pruning
d)	Pw6 Wb3 Sw1 Age - 19 years 3.5 ha	- east end - well stocked Pw plantation demonstrating excellent growth (1 - 1.5+m/yr over past 5 years) - west end - some large openings with overall stocking of approximately 60 to 70% - a few Wb to north require pruning- a few Pw dying of blister rust should be removed - both Stands a and d support good populations of deer, rabbits and ground hogs
e)	B & S Sw8 Pw1 Le1 Age - 13 1.6 ha	- was planted on fill in 1978 but is years only 30% stocked

Proposed Operations:

Refill planting of Pw and Le should be conducted in all three plantations (Stands a,d and e). Simazine spraying may be required in areas with denser competition, ie. Stand e.

b) PFR Aw8 Ms1 Po1 - a small diameter, low quality ash stand growing on a poorly drained, lowland site
Uneven Aged
12.1 ha

c) PFR Mh8 Be2 - a fair quality hard maple stand growing on slightly drier ground - was stand improvement thinned in 1977
Uneven Aged
2.0 ha

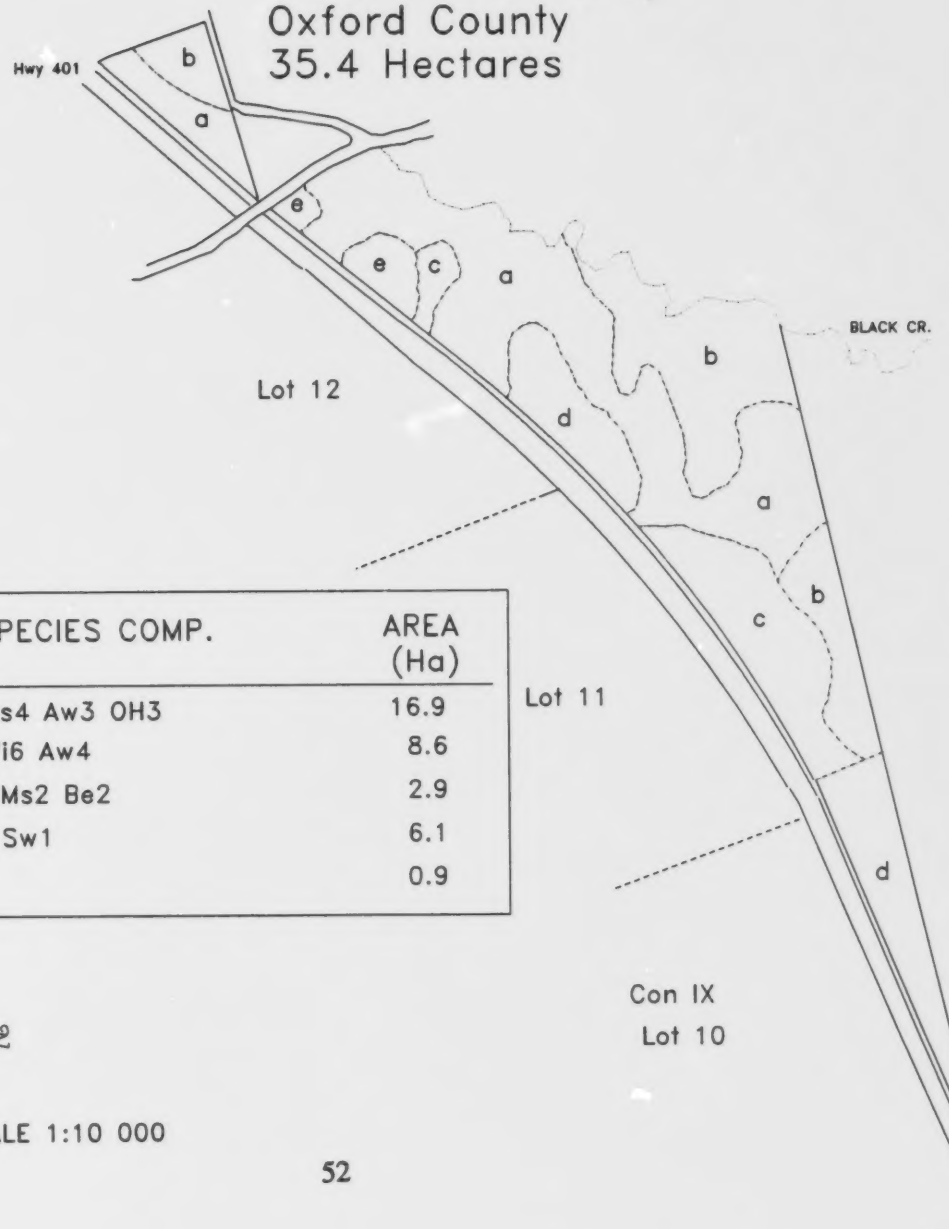
Proposed Operations: None

Both these sites have low potential for growing quality hardwoods and this in combination with poor access makes it an expensive area to manage. Emphasis should be placed on protecting the wetlands and maintaining the excellent wildlife habitat.

BLACK CREEK TRACT

CROWN LAND Compartment 4

Pt.Lots 10,11,12, Con. IX
Blenheim Township
Oxford County
35.4 Hectares



STAND	SPECIES COMP.	AREA (Ha)
a	PF Ms4 Aw3 OH3	16.9
b	PF Wi6 Aw4	8.6
c	Mh6 Ms2 Be2	2.9
d	Pw9 Sw1	6.1
e	B&S	0.9

N

SCALE 1:10 000

BLACK CREEK TRACT

The Black Creek Tract is a very important ecological site and a number of programs designate it as significant:

1) Regionally Significant Life Science A.N.S.I.
2) E.S.A. (Oxford #2) identified by the County
3) Most of tract is within a Class 1 Wetland
4) Alternate Carolinian Canada Site
5) Coldwater stream for fisheries
6) Deer wintering area

These designations direct the implementation of sound, conservation management and encourage continuing public ownership.

The tract is mainly a wetland area and there is no internal road system. The east end of the property can be accessed from County Road #3.

Stand Type	Stand Description
a) PF Ms4 Aw3 OH3 Uneven Aged 16.9 ha	- wet, poorly drained area with low quality, dead and dying stems - evidence of large deer population
b) PF Wi6 Aw4 Uneven Aged 8.6 ha	- low, wet area with extensive patches of shrub willow and dogwood - trees appear unhealthy and are exhibiting poor growth on this poorly drained site

Proposed Operations: None

Both stands should remain as wetland reserves to protect the existing flora and fauna and maintain the water recharge ability of the site.

c) Mh6 Ms2 Be2 Uneven Aged 2.9 ha	- a stand growing on slightly higher ground with better quality stems - a stand improvement thinning was completed in 1977

Proposed Operations:

A light selective harvest of the deformed and defective stems will provide further stand improvement and should release the good quality trees. This material will likely be marketed as fuelwood. A residual basal area of approximately 16 m2/ha should be left. The increased light will encourage seedlings and other ground vegetation. The adjacent land owner, Wayne Meacham, accepted this verbal work proposal on December 21, 1987. He will put in a small road using gravel that exists on the site and a culvert supplied by the Ministry.

d) Pw9 Sw1 - a healthy young pine plantation - part of area was accidentally plowed and subsequently replanted in 1976
Age - 13-17 year
6.1 ha

Proposed Operations: None

The stand has not obtained a stocking level that requires thinning.

e) B & S - open fields with light weed cover
0.9 ha

Proposed Operations:

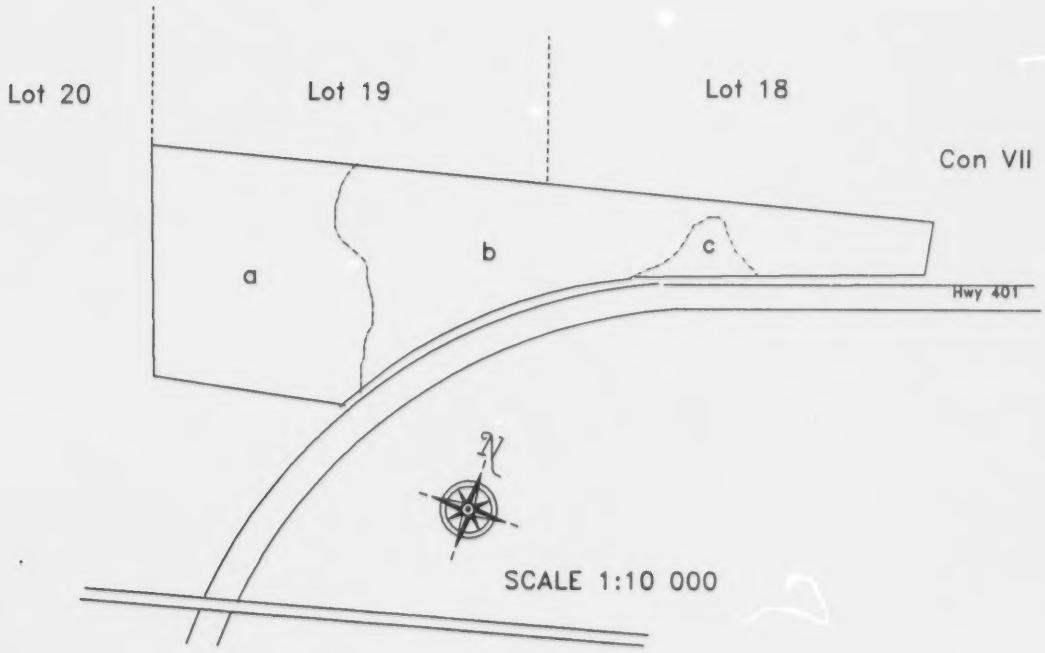
A field inspection should be conducted to determine this site's potential to support tree growth. If potential is reasonable tree planting prescriptions should be written to allow operations to begin during this management period.

EXCHANGE 32 TRACT

CROWN LAND Compartment 5

Pt.Lots 18,19, Con.VII
Blenheim Township
Oxford County
24.7 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	Ms9 Aw1	11.5
b	PF Po3 Bw2 Ce1 OH2 OC2	12.5
c	Pw7 Wb2 Lb1	0.7



EXCHANGE 32 TRACT

The Exchange 32 Tract, like the Black Creek Tract, is a very important ecological site. A number of programs have designated it as significant :

1) Entire tract is Class 1 Wetland
2) E.S.A. (Oxford #2) identified by the County
3) Alternate Carolinian Canada Site
4) Deer wintering area

These designations direct the implementation of sound, conservation management and encourage continuing public ownership.

The area is currently accessed by a unopened road allowance to the north.

Stand Type		Stand Description
a)	Ms9 Aw1 Age - 1 & 104 years 11.5 ha	- March 1987 - part of the stand was harvested to the diameter limit by-law - the cutting was the result of a mistaken ownership problem and Trespass Charges were laid under the Crown Timber Act - additional timber was marked and sold to the same company

Proposed Operations:

The natural regeneration should be assessed within two years and if the stocking is too low (< 60%) it should be supplemented with hand planted silver maple.

b)	PF Po3 Bw2 Ce1 OH2 OC2 Uneven Aged 12.5 ha	- a poor quality wetland woodlot with low potential for timber production - east end refilled with Pw 3 - 5 years ago (70% stocked)

Proposed Operations: None

Should remain as a wetland reserve for the protection of water resources and wildlife habitat. East end of Stand b could be refilled if extra stock is available.

c)	Pw7 Wb2 Lb Age - 13 year 0.7 ha	- a healthy mixed plantation - growing at 1+m/yr for the past 5 years with good stocking - refilled with black locust, silver maple and poplar in 1978

Proposed Operations:

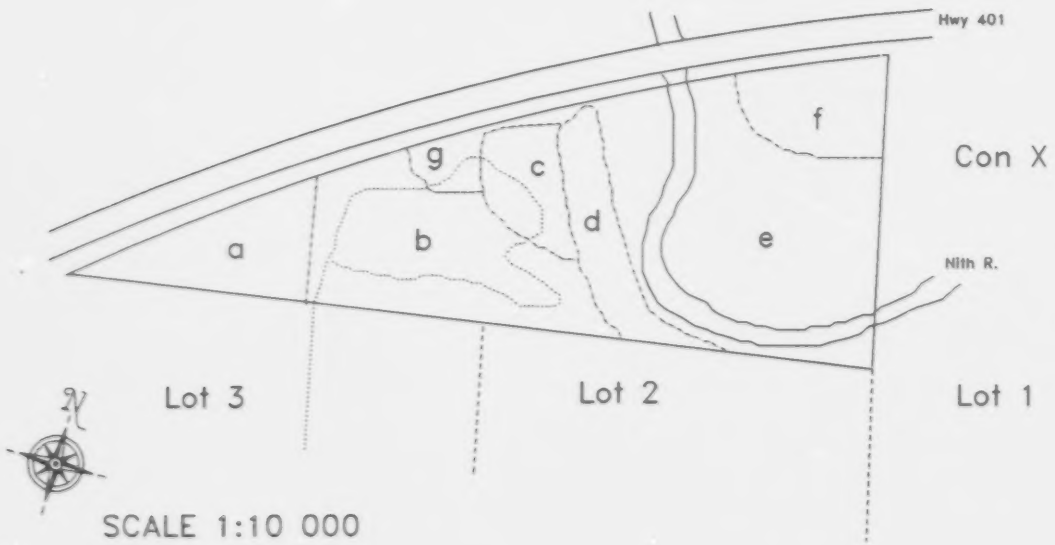
The black walnut requires pruning this management period. The overall stocking level is not high enough to require thinning.

NITH RIVER TRACT

CROWN LAND Compartment 6

Pt.Lots 2,3, Con X
Blenheim Township
Oxford County
30.4 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	Po(Hybrid)5 Wb2 Or1 Aw1 Pw1	3.6
b	Po(Hybrid)5 Ale2 Wb1 Bd1 Mh1	6.9
c	Le4 Wb3 Sw2 Pr1	1.9
d	PFR Mh3 Or3 He2 OH2	2.7
e	PF Flood Plain	10.5
f	Pw10	2.3
g	B&S	0.9
River		1.8



SCALE 1:10 000

NITH RIVER TRACT

The Nith, which is considered a warmwater river, runs through the east end of this tract. The associated ravine and floodplain are forested with native deciduous species.

The remainder of the property contains a pine plantation, a mixed plantation and various research plantings using hybrid poplar as a "nurse crop" for different hardwoods species.

A Crown owned laneway permits access into the west side of the tract where it joins up with an extensive road loop. The section of the property that is east of the Nith River has no road access.

The Ministry of Transportation has recently (April 1988) proposed the Nith River Tract as a potential rest stop location for Highway 401. In an attempt to protect our forestry interests the District has initially turned this proposal down and suggested alternate properties.

	Stand Type	Stand Description
a)	Po(hybrid)5 Wb2 Or1 Aw1 Pw District Planting Age - 13 year 3.6 ha	- establishing hardwoods was attempted through the use of hybrid poplar as a "nurse crop"
b)	Po(hybrid)5 Ale2 Wb1 Bd1 Mh1 Experimental Planting Age - 13 year 6.9 ha	- this was accomplished by intensive cultivation (site preparation), herbicide application and pruning - an excellent hardwood plantation has been established and the poplar has almost reached its rotation age

Proposed Operations:

The poplar overstory may require removal but since these are mainly experimental plantings the scientists in charge will initiate the work.

c) Le4 Wb3 Sw2 Pr1
Age - 44 year
1.9 ha

- this stand was thinned and the walnut was pruned to 5 metres in 1978
- the trees are demonstrating good form
- an excellent Aw understory exists
- Le/Wb is a rare species composition and there are few of this age

Proposed Operations: None

The stand is still quite open and does not require thinning at this time. The walnut mast crop and the excellent understory cover provides good habitat for upland game species.

d) PFR Mh3 Or3 He2 OH2
Uneven Aged
2.7 ha

- a good hardwood stand growing on an extreme slope - was logged many years ago and has been a dump site
- also contains two gullies that are demonstrating erosion problems

Proposed Operations: None

The slope and river bank will be best protected from erosion by maintaining the present forest cover.Some minor thinning maybe necessary in future management periods.

e) PF Ms3 Aw2 Po2 Mh1 Or1 Be1 (Floodplain)
Uneven Aged
10.4 ha

- a scattered scrubby forest of Po, Ew, Mh, Aw, Manitoba maple and many other species - with a dense understory of ostrich fern

Proposed Operations: None

The present stand has little commercial value and no access. The potential flooding problem makes this a marginal tree growing site. Good fish and wildlife habitat exists and could easily be enhanced. A spot planting of black walnut would increase mast production and timber values.

f) Pw10
Age - 24 year
2.3 ha

- an excellent pine plantation with good height growth and survival

Proposed Operations: None

The increase in stocking over this management period will produce a stand that will be ready for a fourth row thinning with selection. This should occur towards the beginning of the next management period. Access should be secured well in advance of any operations.

g) B & S - includes open grassland and a small wet depression
Open Grassland
0.9 ha

Proposed Operations:

A field inspection should be conducted to determine this site's potential to support tree growth. If potential is reasonable tree planting prescriptions should be written to allow operations to begin during this management period.

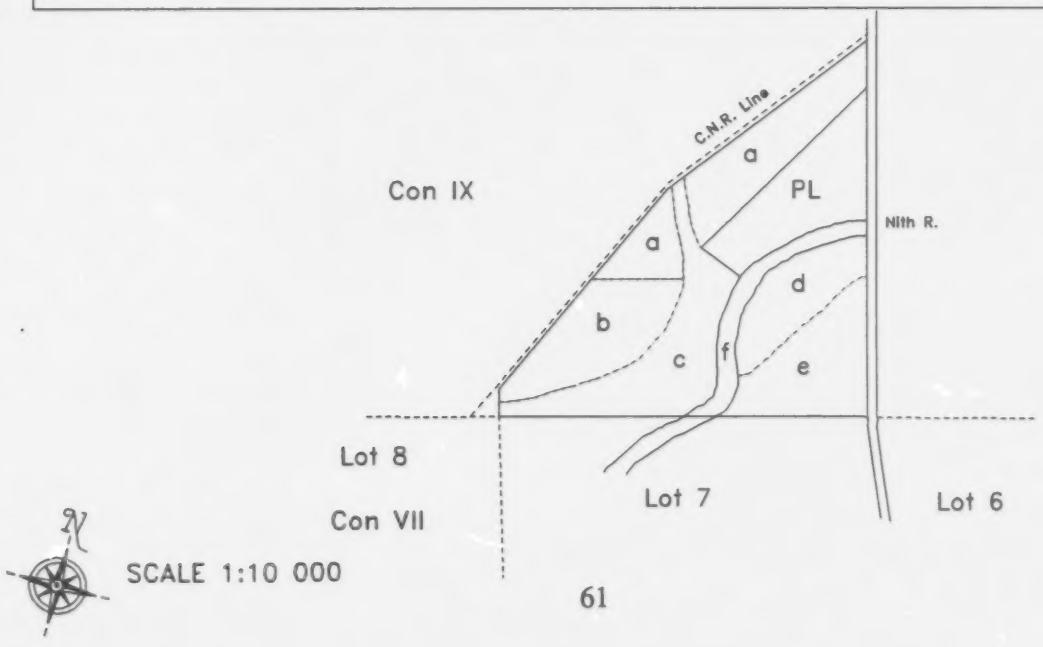
River - 1.8 ha

WOLVERTON TRACT

CROWN LAND Compartment 7

Pt.Lot 7, Con. IX
Blenheim Township
Oxford County
17.6 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	Pw10	4.2
b	Aw4 Ms2 Mh1 Ow1 OH2	2.5
c	PF By2 Ce2 Pw2 Ms1 Aw1 Hi1 OH1	4.4
d	PF Mh5 Aw4 OH1	2.1
e	Mh8 Aw1 OH1	3.2
f	Nith River	1.2
PL	Private Land	



WOLVERTON TRACT

The Wolverton Tract is composed of floodplain woodlands, upland hardwoods and a pine plantation. It is bounded to the north and west by the CPR rail line. There is no internal road but a county road forms the east boundary of the property. Stands d and e have access to this road.

The Nith, a warmwater river, runs through the tract and a coldwater stream drains through Stand c. These are important waters for the district fisheries program.

Stand Type		Stand Description
a)	Pw10 Age - 21 year 4.2 ha	- a healthy pine plantation that has been refilled and partially replanted a number of times - two railway fires (1980 and 1988) have killed a few of the trees along the northwest side of the stand

Proposed Operations: None

This plantation has not reached a stand density that requires thinning and the stand is difficult to access.

b)	Aw4 Ms2 Mh1 Ow1 OH2 Uneven Aged 2.5 ha	- a diverse upland hardwood stand - in 1983 the cull and defective stems (mainly fuelwood) were selectively marked to establish regeneration - no trees have been harvested

Proposed Operation:

The marked trees should be removed. The neighbour across the tracks (Dave Schwass - (519) 539-1892) has been contacted and he is willing to harvest the wood by accessing the tract from his property.

c) PF By2 Ce2 Pw2
Ms1 Aw1 Hi1
OH1
Uneven Aged
4.4 ha - low wet flood plain area with understory of alder, dogwood, hawthorn, apple, beech and poplar

d) PF Mh5 Aw4 OH1
Uneven Aged
2.1 ha

Proposed Operations: None

The stand has evolved through a yearly spring flooding and sedimentation cycle. This specialized vegetation cover is relatively healthy and should be maintained for erosion control and for fish and wildlife habitat.

e) Mh8 Aw1 OH1 - the stand was thinned for fuelwood in 1978 and has re-established crown closure - the stand structure is deficient in regeneration and in the medium to large sawlog size classes
Uneven Aged
3.2 ha

Proposed Operations:

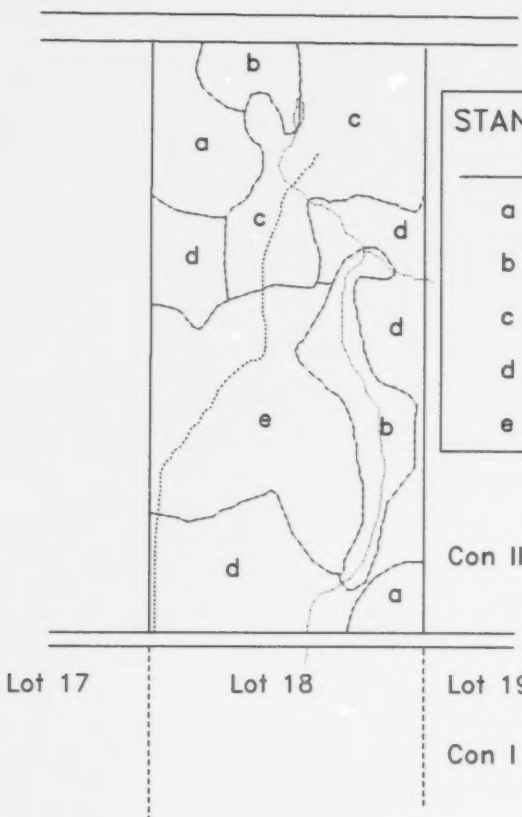
Under the selection system this stand requires a polewood thinning with the additional removal of some of the poorer quality, small sawlogs. Fuelwood will likely be the main product. The stand should be left with a residual basal area of 16 m2/ha. Marking in patches will encourage regeneration and create diversity for wildlife.

River - 1.2 ha

GRACE TRACT

CROWN LAND Compartment 8

Pt.Lot 18, Con. II
Puslinch Township
Wellington County
36.4 Hectares



STAND	SPECIES COMP.	AREA (Ha)
a	Mh4 Be2 He2 OH2	4.5
b	PF Ms7 Ab2 Ce1	5.1
c	Pw5 Ce3 Po2	6.7
d	PF Ms6 Ce3 Po1	10.3
e	He4 Ce2 Mh1 Be1 OH2	9.8

SCALE 1:10 000

GRACE TRACT

More than half of the Grace Tract (Stands a, b and d) is considered a Class 1 Wetland and most of the property is identified as an important deer wintering area. The tract is also used extensively for hunting and wildlife viewing.

A gated road (.82 km) enters the tract in the southwest corner from Concession Road 2. The good quality gravel road meanders diagonally through the central portion of the property. The Highway 401 Corridor provides the north boundary of the tract.

The regionally rare long-eared owl has been sighted in this tract.

Stand Type		Stand Description
a)	Mh4 Be2 He2 OH2 Uneven Aged 4.5 ha	- the diverse stand of upland species is divided into two distinct sections - the southern section was stand improvement thinned for fuelwood in 1978 and the upland portion of the northern section was selection cut in 1980 - no large diameter sawlogs exist in the stand - possibly due to historical or site specific conditions - all other size classes except saplings are well stocked

Proposed Operations:

Under the selection system a commercial sawlog harvest and polewood thinning for fuelwood should be conducted. Marking should reduce residual basal area to 18 m2/ha. This thinning will improve stand structure by releasing the poles and establishing more regeneration. The hemlock component should be maintained as winter deer cover. Wet conditions will limit the operating seasons.

b)	PF Ms7 Ab2 Ce1 Uneven Aged 5.1 ha	- a wetland area containing a pond and minimal forest cover

Proposed Operations: None

The area should be left as a protected wetland for wildlife and water recharge.

c) Pw5 Ce3 Po2 - a healthy plantation exhibiting excellent height growth (2 - 3 m/year over the past 3 years)
Age - 11 year - with the natural cedar and poplar recruitment the stand is almost fully stocked
6.7 ha

Proposed Operation: None - stand too young for thinning

d) PF Ms6 Ce3 Po1 - an extremely wet site with low stocking and poor access
Uneven Aged - evidence of deer, ruffed grouse and rabbits
10.3 ha

Proposed Operations: None

Maintain as wetland reserve for wildlife and water recharge.

e) He4 Ce2 Mh1 - an open mixed stand that was thinned heavily in 1978
Be1 OH2
Uneven Aged
9.8 ha

Proposed Operations: None

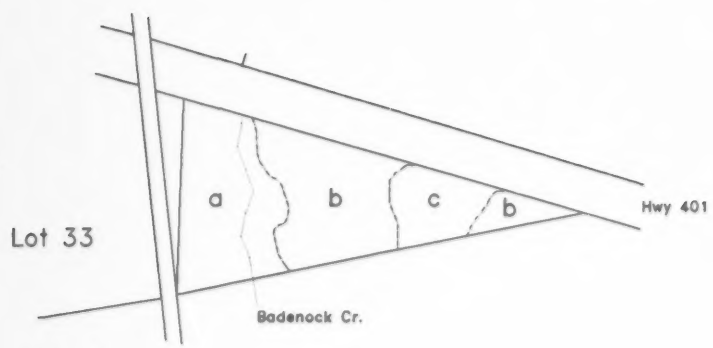
This is the only hemlock stand within the Crown forest in Cambridge District and should be maintained as such. Hemlock is a shade tolerant conifer and since the canopy is relatively open no silvicultural work will be required at this time.

McCRAE TRACT

CROWN LAND Compartment 9

Pt.Lot 33, Con. X
Puslinch Township
Wellington County
8.5 Hectares

STAND	SPECIES COMP.	AREA (HA)
a	PF Po6 Ce3 Aw1	3.1
b	Pw4 Sw3 Ce3	3.5
c	Mh4 Aw3 He2 OH1	1.9



SCALE 1:10 000

McCRAE TRACT

The McCrae Tract contains a wetland that is a potential addition to the neighbouring Class 1 wetland. A coldwater stream flows across the property.

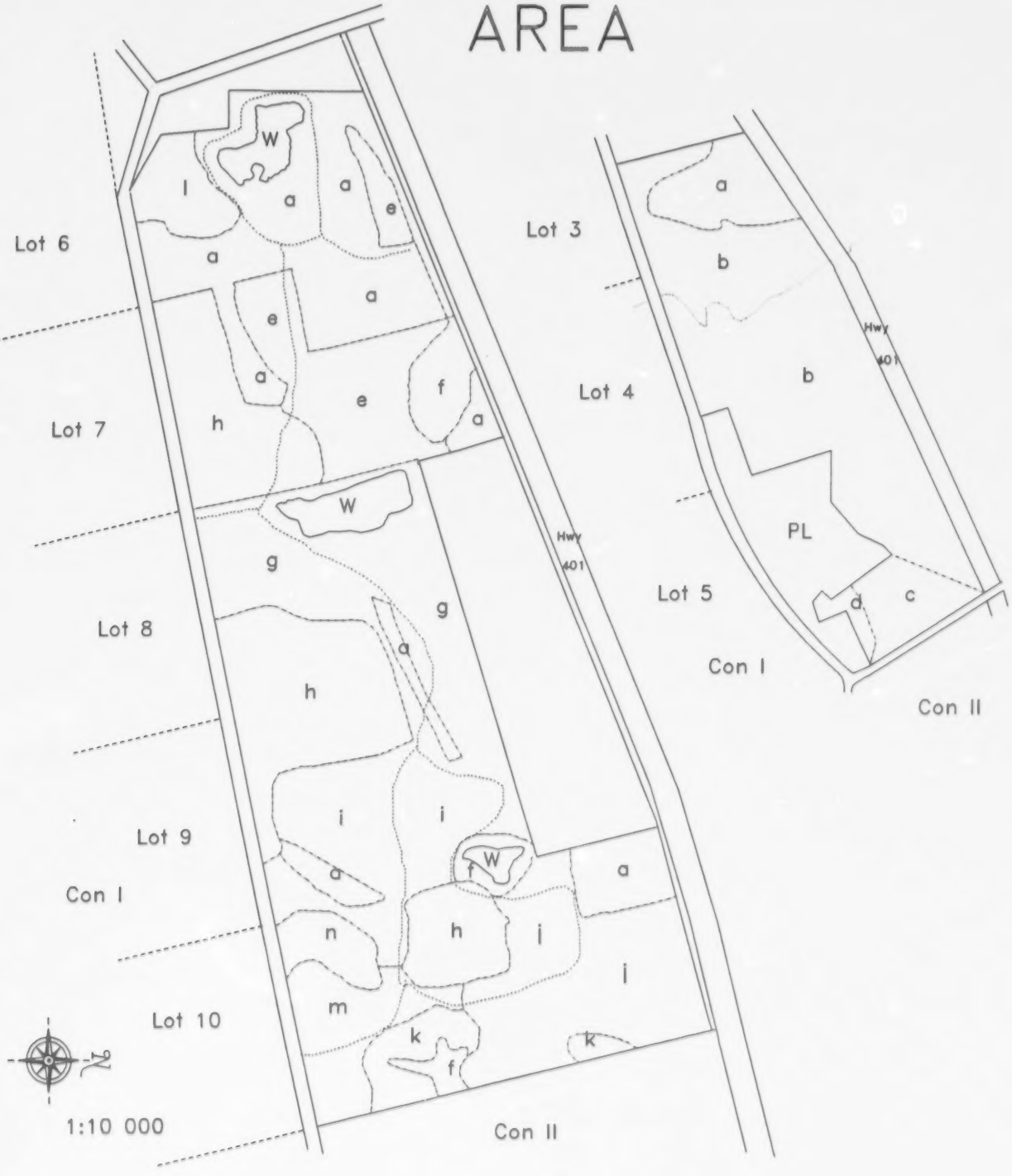
This tract borders on Highway 401 and has no road access.

Stand Type		Stand Description
a)	PF Po6 Ce3 Aw1 Uneven Aged 3.1 ha	- the Badenock Creek flows through this stand - the site is very wet and has low forest management value
b)	Pw4 Sw3 Ce3 Age - 8+ year 3.5 ha	- young conifer plantation with no access - was refilled in 1981
c)	Mh4 Aw3 He2 Oh1 Uneven Aged 1.9 ha	- small stand of hardwood with no access - good ash and maple regeneration

Proposed Operations: None

The small nature of the tract and low productivity of the sites make the area difficult to manage for wood production. In 1979 (Kellar) fish and wildlife made many proposals to conduct a number of projects in this tract, including: removing barbed wire fence, thinning cedars, constructing path and footbridge, planting wildlife shrubs, etc.. Some wildlife shrub plantings were conducted. This wildlife management plan is on file and could be referenced if C.W.I.P. or other similar projects become funded.

PUSLINCH CROWN RESOURCE MANAGEMENT AREA



PUSLINCH CROWN RESOURCE MANAGEMENT AREA

CROWN LAND Compartment 10

Pt.Lots 3–10, Con.II
Puslinch Township
Wellington County
146.6 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	U.C.L.	27.0
b	Pf Bw6 Ce2 He2	24.7
c	Pw7 Pr2 OH1	3.4
d	PF Po7 Ce3	0.7
e	Pw6 Pr4	9.4
f	Swamp	4.1
g	Pr10	14.9
h	Mh7 Aw1 OH2	20.8
i	Pr5 Pw4 Wb1	12.3
j	Pr9 Wb1	13.7
k	Po8 OH2	2.8
l	PF Ce4 Bw3 OH3	2.7
m	Pw3 Sw3 Ce2 Mh2	4.4
n	Mh5 Id3 OH2	2.0
W	Water (3 Ponds)	3.7
PL	Private Land	

PUSLINCH CROWN RESOURCE MANAGEMENT AREA

The Puslinch property has more users and diversified management concerns than any other Crown tract in the District. The area has been the center of numerous planning exercises. Aggregate extraction from the tract was the subject of the province's first Environmental Assessment. In the past the management area has been administered by forestry, fish and wildlife and lands and minerals. It is presently in the hands of the Lands Administrator. This person is responsible for operations and day to day management of the property, including responding to public inquiries, requests for special uses and complaints.

The area includes upland hardwood woodlots, conifer plantations, Class 1 Wetlands, wildlife plantings, open areas, aggregate extraction areas (rights assigned to MTC) and three ponds. There is also a warmwater stream and gravel pits which expose a moraine identified as a Locally Significant Earth Science A.N.S.I..

The eastern portion of this tract is well accessed by an extensive road. The western section has no road access.

It should be noted that there is a small section of Class 1 Wetland across Highway 401 from Stand b that is also part of this tract. It will be considered a part of Stand b.

Careful planning and communication is required to integrate the numerous programs and various users into a management strategy that is effective. Previous planning has resulted in a list of guidelines that appears in Appendix VIII.

The important histories and future (5 year) operating plans for the individual compartments have been listed. Many boundaries between stands were planted with Ontario Landscape Stock to improve wildlife, edge habitat. These trees and shrubs will not be included in the following stand descriptions.

Stand Type		Stand Description
a)	Undeveloped Cleared Land (UCL) 27.0 ha	- most of these areas are open farm fields and gravel extraction areas - some agricultural crops have been planted (ie. corn) as a wildlife food source - these were also the main edge enhancement areas

Proposed Operations: None (Option 1)

In recent years no work has been conducted in these areas. Most of the habitat enhancement projects have been successful and populations of rabbits, fox and song birds have reached the relative carrying capacity of the site.

(Option 2) More habitat enhancement projects to increase the carrying capacity of the site.

The future extraction plans and the small size of these areas has limited the forest management interest. There is a small forest research trial along the east side of the farm. It is a short term project that will not interfere with future aggregate removal.

b) PF Bw6 Ce2 He2 - a wetland area with white birch and lowland conifers
24.7 ha

d) PF Po7 Ce3 - a wetland area with poplar and cedar
0.7 ha

Proposed Operations: None

These areas should remain as wetland reserves for water recharge and wildlife habitat.

c) Pw7 Pr2 OH1
(whole stand)
3.4 ha

Pw10 (west 1/2)	- the stand is fully stocked and is likely infested with blister
Age - 15 year	rust (Cronartium ribicola)
Pw4 Pr4 Aw1	- 60% stocked with poor growth - was refilled in 1985
Wb1 (east 1/2)	- these Sw and Aw have good survival
Age - 3 to 15	- this area was originally planted with a variety of landscape
years	stock species - very few have survived

Proposed Operations:

If the white pine to the west has blister rust it should be removed to eliminate the infestation. The wood is likely too small to be marketed and should be burned to reduce the number of spores. This area and the openings in the area to the east should be replanted with 60 to 80% Norway spruce and 20 to 40% European larch.

e) Pw6 Pr4 - a healthy pine stand with the Pw demonstrating superior growth
Age - 17 years
9.4 ha

g) Pr10 - this stand is barren and scattered with some small groupings
Age - 22 years
14.9 ha

i) Pr5 Pw4 Wb1 - approx. 50% stocked with many openings
Age - 22 years
12.3 ha

j) Pr9 Wb1 - well stocked with some elm regeneration
Age - 24 years
13.7 ha

m)	Pw3 Sw3 Ce2 Mh2 Age - 18 years 4.4 ha	- a fairly dense stand of mixed conifers - Stands a, e, and i are poorly stocked and have branchy stems partially because they were planted at 2.4 x 2.4 m spacings

Proposed Operations: None

The conifer plantations range from barren and scattered to well stocked and most have been refilled a number of times. The shallow soils over gravel are limiting and the plantations have been adequately stocked for the purposes of this tract. There are open areas, clumps for cover and numerous wildlife shrubs. This is excellent rabbit and fox habitat.

Some of the large clumps may require thinning during the next management period.

f)	Swamp 4.1 ha	- wetland area with no tree growing potential

Proposed Operations: None

Leave for wildlife purposes.

h)	Mh7 Aw1 OH2 Uneven Aged 20.8 ha	- three excellent hardwood woodlots that have been thinned three times under selective management - the last harvest was conducted in January 1984 - MNR scientists (Al Beckwith) and the district have put plots into this stand - a file of stand structure data is available at the district

Proposed Operations: None

Thinning will not be required until future management periods.

k) Po8 OH2
Uneven Aged
2.8 ha

- a scrubby stand that has been improvement thinned - the latest thinning occurred in 1985
- cull and wolf trees were marked to encourage hardwood regeneration and improve small game habitat
- a good Mh sapling understory exists but growth has begun to flatten out

Proposed Operations:

Approximately half of the poplar overstory should be removed to encourage the growth of the maple saplings. The overstory residual basal area should be about 10 m2/ha.

l) PF Ce4 Bw3 OH3
2.7 ha

- open wetland area

n) Mh5 Id3 OH2
2.0 ha

- open young hardwood stand - hilly terrain with wet depressions

Proposed Operations: None

Water (3 Ponds) 3.7 ha - deepened by gravel extraction- site of many recreational activities, including: swimming and fishing - the pond in the center of the tract was stocked with trout during the late 1970's and early 1980's - funding from licences has allowed this program to be reinstated in 1988 - the "put and take" trout stocking program allows approximately 4000 fish to be placed in the pond and encourages heavy recreational use during the month of May

Proposed Operations:

The stocking of trout in the spring will continue until a more suitable pond is found. This pond becomes too hot to maintain trout populations throughout the summer.

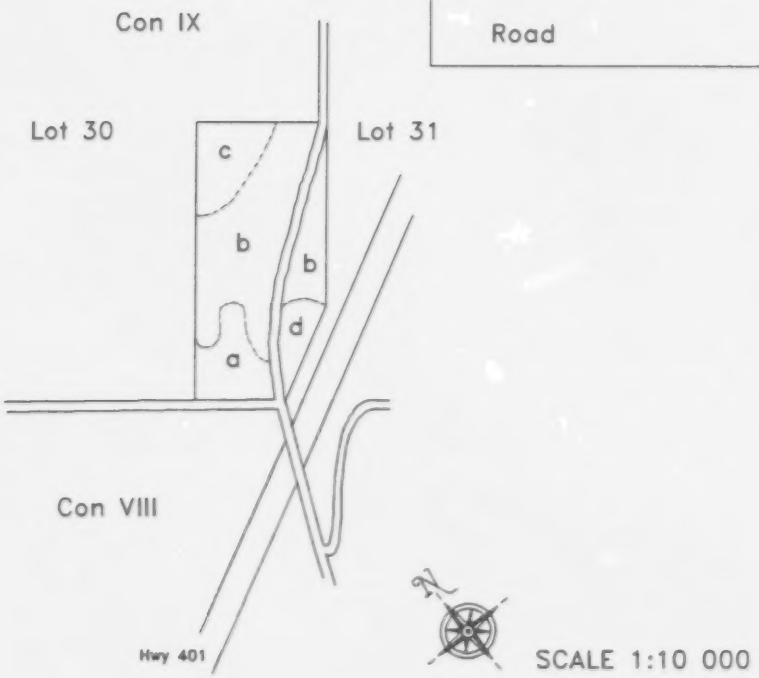
The pond to the west may be enlarged due to future gravel extraction operations.

FRANCIS TRACT

CROWN LAND Compartment 12

Pt.Lot 30, Con. IX
Puslinch Township
Wellington County
8.1 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	Pw8 Sw1 Ce1	1.2
b	PF Ce5 Po5	5.1
c	Non-Productive Forest Land	1.2
d	Sw10	0.4
Road		0.2



SCALE 1:10 000

FRANCIS TRACT

The Francis Tract is presently administered by the Ministry of Transportation and permission has been granted for the MNR to "carry out work". Conifer plantings have been the main form of management.

The property has a small area of lowland hardwoods, two small conifer plantations and the central portion of the tract contains a Class 7 Wetland.

No enhancement projects, such as roads or parking lots, have been conducted in this tract.

Stand Type		Stand Description
a)	Pw8 Sw1 Ce1 Age - 17 years 1.2 ha	- a healthy pine plantation with good natural cedar recruitment along the edges and in the openings
c)	Non-Productive Forest Land 1.2 ha	- a poor pasture field with field grasses and dogwood - had been spot planted a few times but most trees did not survive
d)	Sw10 Age - 13 to 17 years 0.4 ha	- refilled with Sw in 1976 - healthy young stand of spruce

Proposed Operations: None

Most areas other than the plantations are relatively unproductive for forest growth. However, a diversity of desirable wildlife shrubs and conifer cover provide excellent habitat in a surrounding agricultural landscape with few forested areas. The conifer plantations are too young for thinning.

b)	PF Ce5 Po5 Uneven Aged 5.1 ha	- a wet site with excellent potential for wildlife habitat management - low potential for wood production

Proposed Operations:

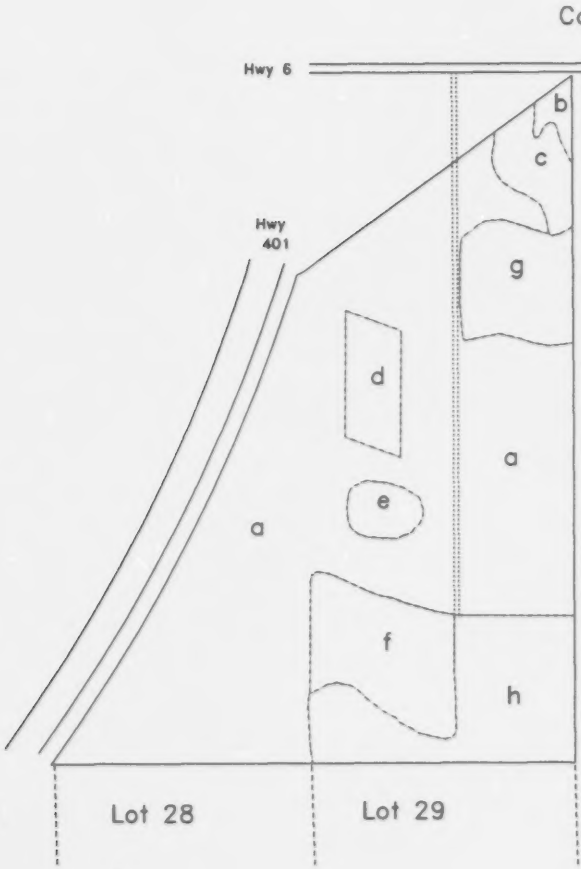
Fish and wildlife has proposed to contact Ducks Unlimited to determine their interest in creating a one hectare pond.

Road - 0.2 ha

MORRISTON TRACT

CROWN LAND Compartment 13

Pt.Lots 28,29, Con. VII
Puslinch Township
Wellington County
52.6 Hectares



STAND	SPECIES COMP.	AREA (Ha)
a	Pr10	34.9
b	B & S	0.4
c	Swamp	1.8
d	Experimental Planting	1.7
e	Ps4 Sw1 Pr1 Pw1 Ms1 Wb1 Po1	0.8
f	Aw8 Or1 Pw1	3.9
g	Aw8 Or1 Pw1	3.3
h	Mh7 Be1 Bd1 Cb1	5.8

SCALE 1:10 000

MORRISTON TRACT

The Morriston Tract is presently administered by the Ministry of Transportation and in 1970. the MNR was granted permission to "carry out work". Since then the property has been managed for forestry, wildlife, recreation and research.

Most of the open farm fields were planted from 1971 to 1976.

Alterations to Highway 6 may impact upon part of the tract.

This area receives use from many recreationists. Recently dog training clubs have received special use permits for trials and seminars.

The access road required an easement across private land to Highway #6. The road runs lengthwise through the middle of the tract to Stand (h).

Stand Type		Stand Description
a)	Pr10 Age - 18 years 34.9 ha	- this plantation was planted at 2.4 x 2.4 m spacing and is presently an open stand of young pine growing in clump - they are demonstrating variable growth and survival due to extremely rolling topography - ground vegetation mainly consists of grasses - in 1985 a small fire occurred west of the gate - the grass was burned and a few trees were killed - the fencerows have developed into excellent wildlife habitat - the existing basswood, white ash, mountain ash, black cherry, hawthorn, wild apple and grape were supplemented with Russian olive and caragana

Proposed Operations: None

Replantings indicate that red pine will likely only grow where it is presently established. The open grown nature of these trees greatly reduces their potential future value. Refill plantings of other species and the slopes would make future operations difficult and costly. These openings are also providing additional edge habitat. This stand is best left to wildlife and recreational uses.

b) B & S
0.4 ha

c) Swamp
1.8 ha

d) Experimental Planting -no information available on the district files
1.7 ha

e) Ps4 Sw1 Pr1 Pw1
Ms1 Wb1 Po1
0.8 ha
Age - 18 years

Proposed Operations: None

f) Aw8 Or1 Pw1
Uneven Aged
3.9 ha - young sapling stands that have plenty of natural white ash seeding into them

g) Aw8 Or1 Pw1
Age - 16 years
3.3 ha

Proposed Operations: None

h) Mh7 Be1 Bd1 Cb1
Uneven Aged
5.8 ha
- a healthy stand of managed hardwoods that was heavily thinned in 1978
- brush piles were constructed to improve wildlife habitat
- a good understory of Mh and Bd saplings

Proposed Operations: None

At the present rate of growth this stand will be ready for thinning during the next management period. More brush piles could be constructed at that time.

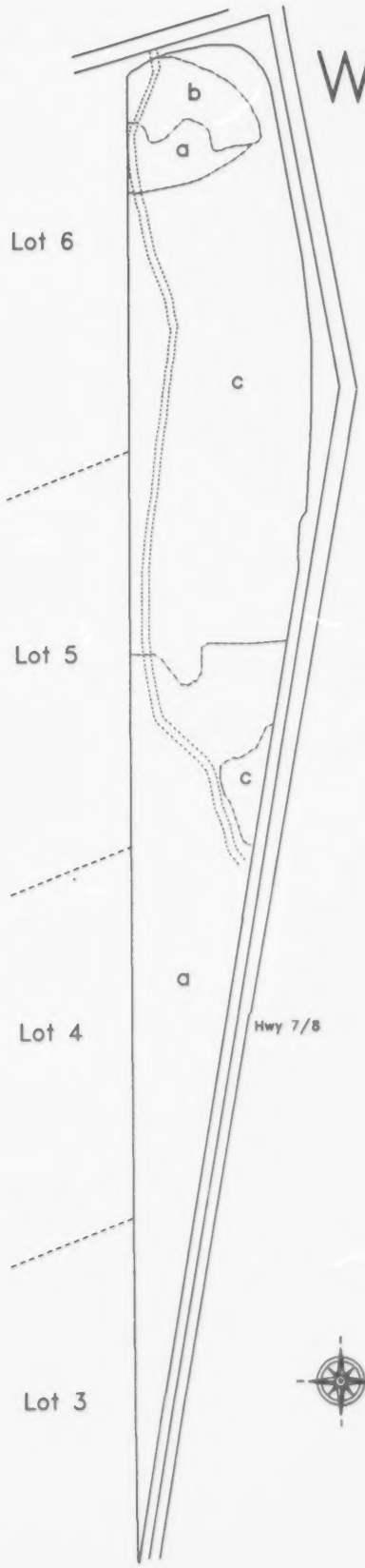
If a C.W.I.P. or other similar project were organized, 1981 proposals, such as apple tree pruning and the removal of the barbed-wire fence along the E-W boundary, could be considered.

WILMOT TRACT

CROWN LAND

Compartment 14

Pt.Lots 3–6, Con. S.S.R.
Wilmot Township
Waterloo Region
41 Hectares



STAND	SPECIES COMP.	AREA (Ha)
a	Mh7 Be2 OH1	17.7
b	PFR By4 He4 Ms2	1.7
c	Pw5 Sw4 Wb1	21.6

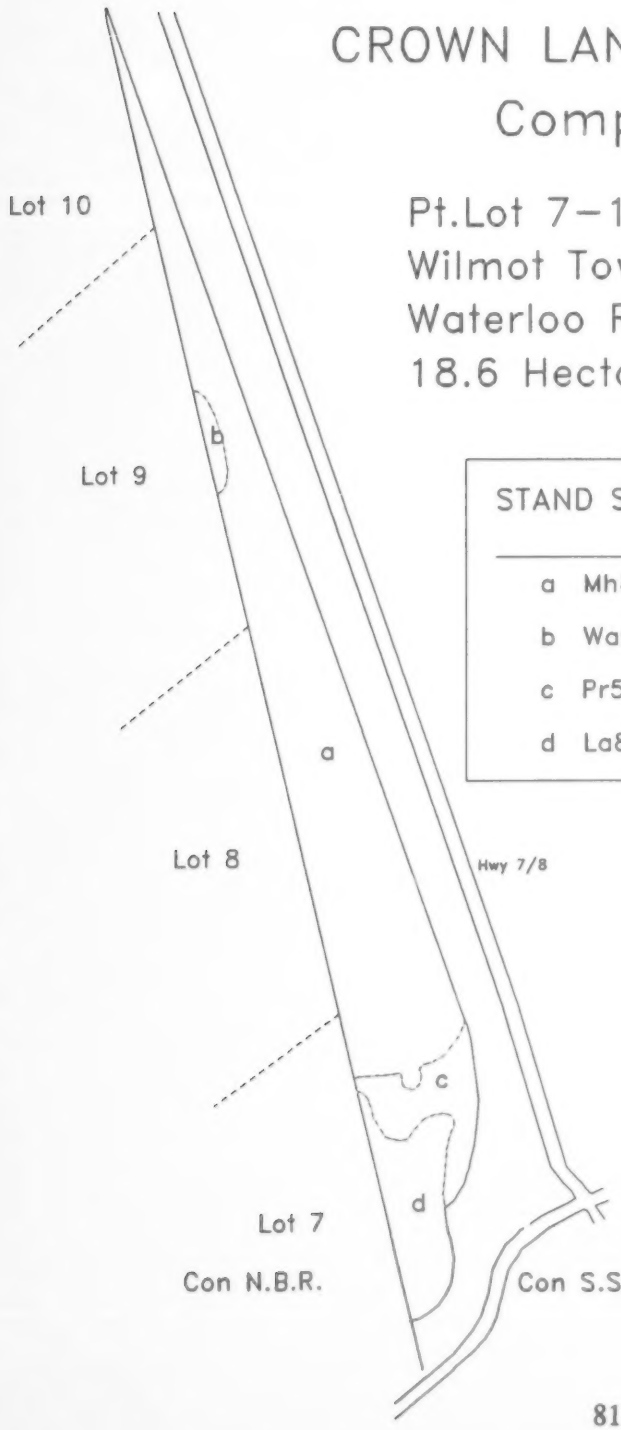
SCALE 1:10 000

HOFSTETTER LAKE TRACT

CROWN LAND

Compartment 15

Pt.Lot 7–10, Con. S.S.R.
Wilmot Township
Waterloo Region
18.6 Hectares



STAND	SPECIES COMP.	AREA (Ha)
a	Mh8 Be1 OH1	13.6
b	Water	0.6
c	Pr5 Pw3 Aw2	2.0
d	La8 OH2	2.4

SCALE 1:10 000

WILMOT TRACT
and
HOFSTETTER LAKE TRACT

Both tracts are narrow parcels of land on the south side of Highway 7/8.

An excellent hardwood woodlot is growing on the undulating loamy hills of the Hofstetter Lake Tract. Funding should be requested to allow negotiations for an easement to access the tract from Regional Road 12. Woodlot management activities require this access and no activities are planned until a right-of-way is granted. Future highway construction operations may provide an opportunity for short term access.

The Wilmot Tract has a warmwater stream and the Hofstetter Lake Tract has a coldwater stream.

A gated road enters the Wilmot Tract from Regional Road 12 and continues 1.44 km into the center of the tract.

WILMOT TRACT

Stand Type		Stand Description
a)	Mh7 Be2 OH1 Uneven Aged 17.7 ha	- an excellent upland hardwood stand that has responded well to thinning begun in 1979 and completed in 1982 - fully stocked sawlog size classes with abundant regeneration and saplings - a deficiency remains in the polewood size class

Proposed Operations:

The overstory has reached crown closure and thinning is required to maintain regeneration growth and to improve the quality of the sawlogs. Selection cutting should remove the poorer quality sawlogs in 1/10 to 1/5 hectare patches. This will move saplings into the polewood size class sooner and provide diversity for wildlife. Approximately 4 m2/ha of basal area should be removed as sawlogs. This will leave a residual stocking of 18.5 m2/ha.

b) PFR By4 He4 Ms2
1.7 ha
- land slopes steeply into a wet basin
Uneven Aged
- the sides support a few trees with good height and diameter growth but generally the stocking is poor
- hemlock and white cedar growing in the understory

Proposed Operations: None

Stand should be left as a wetland reserve for wildlife and water recharge.

c) Pw5 Sw4 Wb1
Age - 14 year
21.6 ha
- the large portion of this plantation was established with Pw, Sw, Or, Wb and Aw in 1975 at 2.44 by 2.44 m spacing
- the remaining portions were planted the following year with Sw, Pr and Wb
- refills were conducted in 1978 and 500 Sn were refilled in 1981
- the black walnut was pruned in 1980 and 1985

Proposed Operations: None

The plantation is putting on excellent growth but is still too young for thinning.

HOFSTETTER LAKE TRACT

- the access problem has created a situation where no hardwood management can be conducted

Stand Type		Stand Description
a)	Mh8 Be1 OH1 Uneven Aged 13.6 ha	- a healthy upland hardwood stand
b)	Water - 0.6 ha	
c)	Pr5 Pw3 Aw2 Age - 11 year 2.0 ha	- Planted in 1978
d)	La8 OH2 Uneven Aged 2.4 ha	- swampy poorly drained

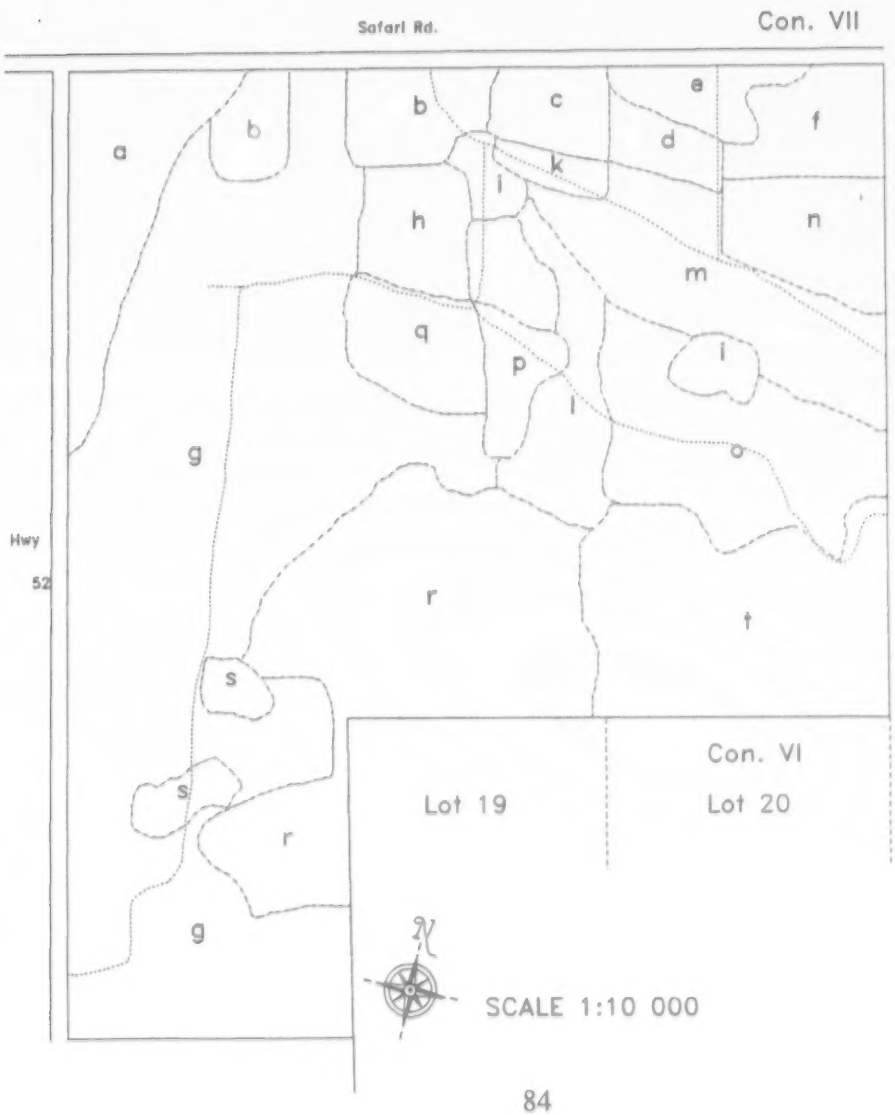
Proposed Operations: None

No operations are planned until access is granted.

HYDE TRACT

CROWN LAND Compartment 16

Pt.Lot 19,20,21 Con. VI
Beverley Township
Hamilton–Wentworth Region
141.8 Hectares



HYDE TRACT

STAND LISTING

STAND	SPECIES COMP.	AREA (Ha)
a	PF Pw5 Or2 Bd1 Cb1 OH1	6.3
b	Pw7 Sw2 Pr1	5.0
c	Pr6 Pj3 Aw1	1.5
d	Le5 Sw2 Pr2 Aw1	1.7
e	Ps5 Sw3 Po1 OC1	1.6
f	PF Ms5 Po5	3.6
g	PFR Ps4 Pw3 Sw2 OH1	48.1
h	Pw7 Pr2 Ps1	2.9
i	UCL	2.4
j	Pr6 Pw4	1.9
k	Sw7 Pr2 Pw1	1.0
l	Pr6 Pw2 Ps1 OC1	5.0
m	Pr4 Sw3 Pw2 Ps1	8.4
n	Pj7 Sw2 Po1	3.7
o	Sw4 Le4 OC2	9.7
p	Pr8 Sw2	1.8
q	PF Pj8 Ps2	3.5
r	PF Aw3 Mh2 Ow2 Bd1 Ew1 OH1	18.7
s	Pw6 Ps2 Sw1 Pr1	2.3
t	PF Aw2 Bd2 Hi2 Mh1 Pr1 Pj1 OH1	12.7

HYDE TRACT

The Hyde Tract is a large tract with over 100 ha of conifer plantations.

A drumlin with deep, well-drained but compacted, loamy soils runs across the northeast corner of the tract. Most species demonstrate their best growth on this part of the property. In some cases these hillsides have been subjected to erosion and where this occurs the level of carbonates increases in the upper soil horizons. The high carbonate levels cause the pines (especially red pine) to become chlorotic and begin to die-back after about 30 years growth. The trees on the remainder of the property are stunted due to shallow site conditions.

An extensive road system (3.84 km) and numerous trails provide excellent access. Some of the roads and trails have deteriorated due to extensive use by horse and motorized vehicle traffic. There is a parking lot and one gated entrance. There are two other entrances that are blocked to restrict unauthorized access.

This tract receives heavy use from many different recreational users and historically has been the center of numerous conflicts between users. In an attempt to resolve these conflicts a trail system that separated the different user groups was established.

The entire tract is within a regionally identified E.S.A. (Hamilton-Wentworth # 4). The regionally rare chinquapin oak and regionally uncommon golden-winged warbler, red-breasted nuthatch and pine warbler have been observed on this property. If work is restricted to months other than the June and July nesting period the proposed operations will not significantly affect the habitats of these species.

Stand Type		Stand Description
a)	PF Pw5 Or2 Bd1 Cb1 OH1 Uneven Age 6.3 ha	- a poorly stocked stand of natural hardwoods with a few remnants of a white pine plantation - a shallow, wet site with low potential for growing commercial timber

Proposed Operations: none

The forest cover should be maintained for site protection and wildlife habitat.

b)	Pw7 Sw2 Pr1 Age - 44 years 5.0 ha	- this stand is divided into east and west sections - both sections have received moderate thinning - the east section contains white pine and white spruce and the west has red pine and both white and Norway spruce - in both sections the trees are relatively healthy (except for some die-back in the red pine) and well stocked - regeneration is poor due to low light conditions

Proposed Operations:

West - Up to 50% of the large diameter red pine sawlogs should be selectively thinned. This will include the removal of good quality sawlogs and all those trees demonstrating severe die-back. The middle row of spruce should be removed for access. The remaining spruce rows require the selective thinning of 25% of the poorest quality stems. Most of the spruce thinnings will be sold as pulp, chip or other ground wood products. The residual basal area should be approximately 25 m2/ha.

East - Where access corridors do not exist a fourth row thinning should be conducted. In the remaining rows and in areas where access is present, selection thinning will be utilized to improve the growing stock. Some sawlogs may be available in this thinning but most of the material will be of pulpwood sizes. Approximately 25 m2/ha of basal area should be left on the site.

c)	Pr6 Pj3 Aw1 Age - 39 years 1.5 ha	- die-back and greatly reduced growth rates due to carbonates has resulted in the natural and artificial thinning of the pine - a widely spaced overstory exists - a well stocked understory of white ash and black cherry with some scattered white oak on the hillside

Proposed Operations:

(Option 1) Manage as a shelterwood by leaving the overstory as it is and spot planting oak (Ow or Or or both if they are available). Some chemical (approved) will likely be required prior to planting.

(Option 2) Option 1 plus the removal of all or most of the overstory to release the hardwood regeneration and salvage the mature conifers.

d) Le5 Sw2 Pr2 Aw1
Age - 39 years
1.7 ha

- the stand contains a number of healthy large diameter (30-40cm DBH) larch - red pine component is demonstrating die-back due to carbonates
- the spruce and larch are well stocked with little to no regeneration in the understory
- there are a few rows of pruned black walnut that are growing slowly

Proposed Operations:

The red pine should be salvage cut and approximately 10% of the larch and spruce basal area should be selectively thinned. The selection should remove most of the poor quality trees and provide spacing where it is needed. The residual basal area should be approximately 24 m2/ha. The thinning material will mainly yield pulpwood value products.

Maintaining the ash and opening the pine rows should encourage the natural regeneration of a mixedwood stand.

e) Ps5 Sw3 Po1 OC1
Age - 39 years
1.6 ha

- poor quality Scots pine stand with varying levels of white ash and spruce regeneration
- there are a large number of competing shrubs

Proposed Operations:

These options are presented with the understanding that the markets for material such as this is very poor and that the choices lean heavily towards Option 1.

(Option 1) None - Leave the overstory to deteriorate and allow the regeneration to establish itself naturally.

(Option 2) Same as Option 1 except plan to salvage the overstory during the next management period.

(Option 3) Remove the overstory as a salvage clear cut and spot plant to increase the stocking of the regeneration.

f) PF Ms5 Po5
Uneven Aged
3.6 ha

- a lowland site with a small creek running through the stand in a southwesterly direction
- the stocking is low and the potential for commercial timber production is also low

Proposed Operations: None

The vegetation cover should be maintained for wetland site protection and wildlife habitat.

g) PFR Ps4 Pw3 Sw2 OH1
Age - 44 years
48.1 ha

- this is a large stand of dying (due to Diplodia pinea/Sphaeropsis sapinea) low volume Scots pine with white pine demonstrating slowing growth rates
- a shallow site with soil depths of 0 to 20 cm and low potential for tree growth
- Scots pine regeneration very dense in some places
- a high deer population exists in this stand

Proposed Operations: None

This stand provides adequate vegetation cover for this relatively fragile site. The trees should be maintained for their site protecting qualities and as cover for wildlife (deer and small game) management.

h) Pw7 Pr2 Ps1
Age - 44 years
2.9 ha

- a healthy overstocked stand with no understory
- most of the area was fourth row thinned in 1971 and 1973 and the white pine crop trees were pruned

Proposed Operations:

The red pine and Scots pine should be removed due to site (carbonates) and disease (Diplodia pinea/Sphaeopsis sapinea) conditions. A few healthy Scots pine should be left for wildlife and some brush piles could be constructed near openings. The white pine should be selectively cut to release the crop trees. The combined harvest should not exceed one third of the basal area (44 m2/ha), leaving approximately 29 m2/ha of residual basal area.

i) UCL
2.4 ha

- this cleared land is occupied by remnant foundations and has been disturbed by building construction and farm use

Proposed Operations: None

j) Pr6 Pw4
Age - 44 years
1.9 ha

- the red pine was heavily thinned (1979) to remove those exhibiting die-back due to carbonates
- very open overstory with heavy understory growth consisting mainly of raspberry

Proposed Operations:

This stand should be managed as a shelterwood and prior to underplanting with oak (Ow or Or or both) and larch the ground vegetation should be controlled with an approved chemical. Most of the overstory should be carefully removed during the next management period or after the oak regeneration has reached two metres in height.

k) Sw7 Pr2 Pw1
Age - 44 years
1.0 ha

- the Pr to the north was second row thinned in 1971 with crop tree pruning (Pr and Pw)
- the spruce have dense canopies with no understory but basal area (14 m2/ha) and diameters are too low for thinning

Proposed Operations: None

l) Pr6 Pw2 Ps1 OC1
Age - 34 years
5.0 ha

- stand has reached crown closure and the red pine on the hillside is dying due to carbonates - there is no regeneration

Proposed Operations:

A fourth row thinning should aim at reducing the red pine component and improving the access. All the Scots pine and red pine exhibiting die-back should be salvage cut at this time. The residual basal area should be approximately 25 m2/ha.

m) Pr4 Sw3 Pw2 Ps1
Age - 44 years
8.4 ha

- situated on top of the drumlin and is highly eroded and dry
- the red pine was heavily thinned (1979) to remove those exhibiting die-back due to carbonates - the remaining pine has not responded to the release and in most cases did not deteriorate further
- the regeneration of Pw,Sw,Aw,Bd, and Ow is fairly well established (50 to 80% stocked) - in areas with the densest overstory the ground competition of raspberry, wild grape and poison ivy is greatest

Proposed Operations:

Regeneration should be assessed in 2 to 3 years and a decision to underplant should be made at that time.

n) Pj7 Sw2 Po1 - was cross-row thinned in 1971
Age - 44 years - the jack pine is dead and dying and contains no volume
3.7 ha - white pine, spruce, poplar and white ash have seeded in naturally and are well stocked

Proposed Operations: None

The overstory contains no timber value and the understory is well established. A good example of an altered system where those species better adapted to the conditions have reclaimed the site.

o) Sw4 Le4 Oc2 - some row thinning in 1971 - the red pine in the southeast corner was strip cut in 1979
Age - 44 years - in many cases the species are mixed within rows
9.7 ha - the south facing side of the drumlin is demonstrating the best tree growth
- well developed white ash understory - the remainder of the stand is shallow and the trees are poorly stocked and stunted

Proposed Operations:

On the hillside in the northeast corner 3 hectares of the stand should be thinned. Total basal area removal should not exceed one third and the residual should be approximately 25 m2/ha. One out of every four rows should be removed with selective thinning in the remaining rows. The best quality spruce and larch should be maintained as crop trees. A few brush piles (1/ha) could be constructed near openings. The open strips in the red pine cutting can be planted with oak and larch as in Stand (j).

p) Pr8 Sw2 - fourth row thinned in 1971 - Scots pine has all been removed
Age - 44 years - regeneration is approximately 20% stocked and is mainly Aw
1.8 ha

Proposed Operations: None

The stand is quite open with a basal area of 24 m2/ha.

q) PF Pj8 Ps2 - a dying, low volume, unmerchantable stand growing on a shallow infertile site - brushy understory of prickly ash and raspberry with some (5%) hardwood regeneration of Aw, Cb, & Ow
Age - 39 years
3.5 ha

Proposed Operations: None

No revenue could be generated from a harvest and the site has a low potential for growing trees. Natural succession will maintain a site protecting vegetation cover.

r)	PF Aw3 Mh2 Ow2 Bd1 Ew1 OH1 Uneven Aged 18.7 ha	- a mixed stand of low quality hardwoods - brush piles were erected throughout these stands over 10 years ago
t)	PF Aw2 Bd2 Hi2 Mh1 Pr1 Pj1 OH1 Uneven Aged 12.7 ha	- prickly ash, blue beech and ironwood are also common to these areas

Proposed Operations: None

Maintain as wildlife and site protection areas.

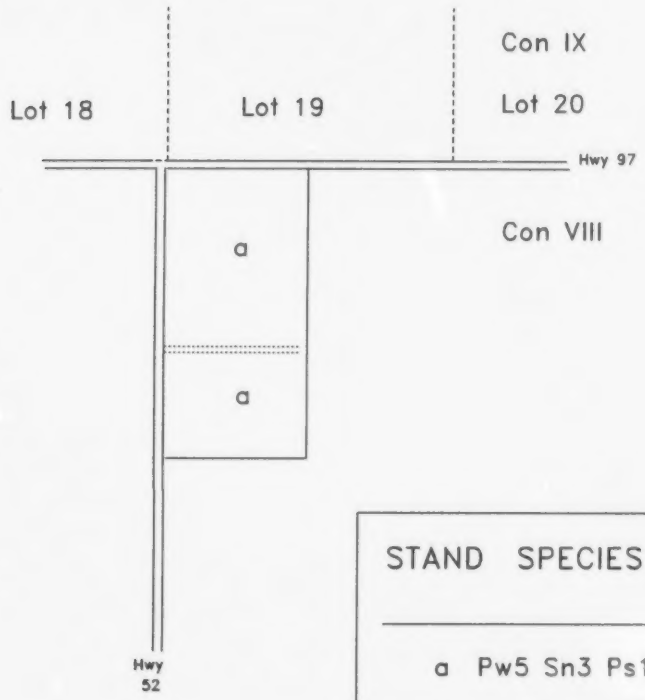
s)	Pw6 Ps2 Sw1 Pr1 Age - 39 years 2.3 ha	- most of this stand was row and selectively thinned in 1979 - poor response to thinning but Pw is healthy - well established understory of Bd, Aw, and Ew 1 to 3+m - will likely require release during next management period

Proposed Operation: None

KIRKWALL TRACT

CROWN LAND Compartment 17

Pt. Lot 19, Con. VIII
Beverley Township
Hamilton–Wentworth Region
10.1 Hectares



STAND	SPECIES COMP.	AREA (Ha)
a	Pw5 Sn3 Ps1 OH1	10.1

SCALE 1:10 000

KIRKWALL TRACT

The Kirkwall Tract is a small block of conifer plantation that is growing on very rapid to well drained, loamy soils. Slightly greater soil depths demonstrate a higher productivity potential than most of the other Crown tracts in Beverley Township.

A sound .24 km road runs from east to west across the central portion of the tract.

Stand Type		Stand Description
a)	Pw5 Sn3 Ps1 Oh1 Age - 46 years 10.1 ha	- this stand has been thinned and pruned a number of times - the entire stand was last thinned in 1982 and it yielded 206 m3 of pulpwood - 30% of the area south of the road is stocked with poor quality Scots pine and jack pine - the remaining area has had most of the Scots pine and jack pine removed and the white pine and Norway spruce that remain are expressing vigour and have adequate growing space - advanced regeneration of white ash, hard maple and white pine exists over most of the stand

Proposed Operations:

The Scots pine and jack pine south of the road should be removed with the larger diameters marketed as pallets and the remaining being sold as pulp or chip products. The basal area that should remain on this 4 ha area is approximately 17 m2/ha.

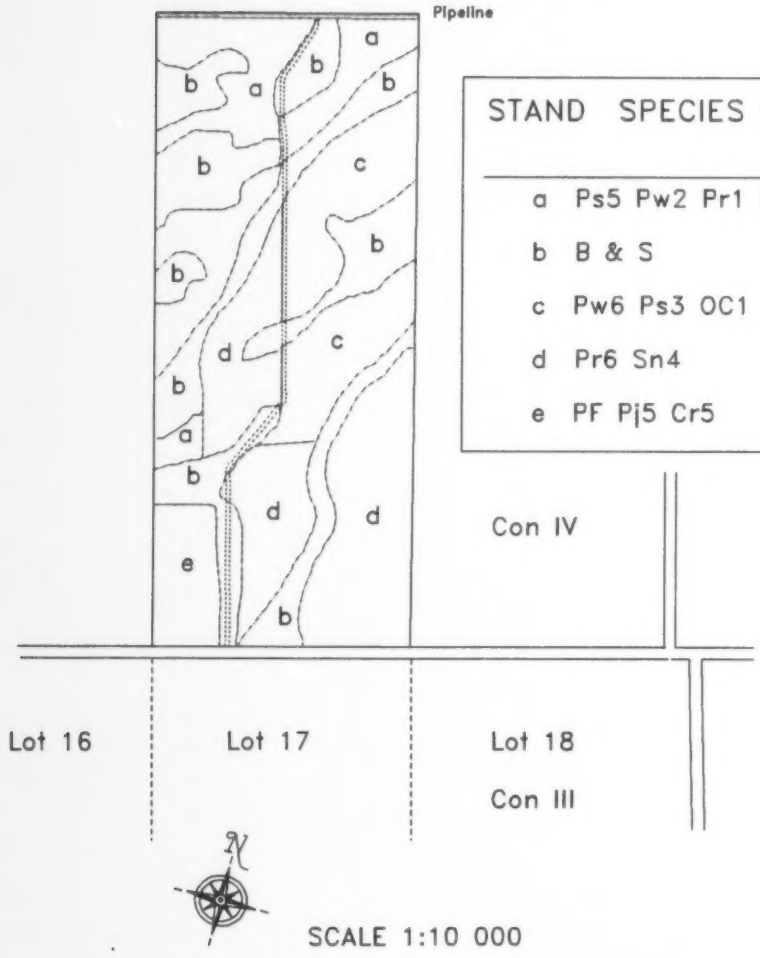
The two tier forest that has developed north of the road can be managed as a uniform shelterwood. The regeneration is established and now the first removal cut is required. Those trees 20 to 24 cm in diameter (at breast height) or less will be removed, except where required for spacing. Some larger diameter trees should be removed to permit a maximum of 6.5m spacing between crop trees. The residual basal area should be approximately 17 m2/ha. This coincides well with the previous crop tree prunings; 250 trees were pruned per hectare. The first removal cut will allow the mixedwood understory to become well established saplings and polewood and the overstory will develop into high quality, large diameter, conifer sawlogs. Most of the thinning material can be marketed with the pine products being removed from the southern part of the tract. Some sawlog material will also be available.

The dense understory and more than adequate cover provides excellent habitat for many wildlife species.

PATTERSON TRACT

CROWN LAND Compartment 18

Lot 17, Con IV
Beverley Township
Hamilton–Wentworth Region
40.5 Hectares



STAND	SPECIES COMP.	AREA (Ha)
a	Ps5 Pw2 Pr1 Sw1 OC1	7.3
b	B & S	13.0
c	Pw6 Ps3 OC1	8.1
d	Pr6 Sn4	10.1
e	PF Pj5 Cr5	2.0

PATTERSON TRACT

The Patterson Tract is well accessed by a 2.26 km central road running the entire length of the tract.

Openings and well stocked pine plantations provide good diversity for wildlife and recreation.

The soil is shallow and tree growth rates are expected to drop as the trees reach the soil rooting capacity.

The golden-crowned kinglet is a regionally uncommon species found to exist at this tract.

Stand Type		Stand Description
a)	Ps5 Pw2 Pr1 Sw1 Oc1 Age - 34 years 7.3 ha	- a segmented stand with many different species, planting arrangements and thinning operations - the east section of the stand contains a large percentage of poor quality dead and dying Scots Pine - regeneration of white ash, white elm and hard maple is well established over most of this stand

Proposed Operations:

Pure Scots pine areas should be clearcut to salvage any available material for pulp, chips or ground wood products. Wildlife habitat can be enhanced by leaving small patches of standing trees and establishing brush piles at the edges of treed areas.

The rest of the stand should be thinned by removing two out of every five rows. In many places spacing was less than 1.8 m between rows. Therefore, two row removal will be required for access. Selection thinning should be conducted in the remaining rows, with emphasis on the middle row. Spruce should be maintained as the main crop species. A residual basal area of 12 m2/ha should be left.

The established hardwood regeneration and subsequent natural seeding should be sufficient to establish the future stand. Regeneration should be assessed during the next planning period.

b)	B & S open land 12.5 ha	- planted and natural species include: Sw, Sn, Pw, Ow, Aw, Ew, Ms - shallow sites and drainage-ways with many openings

Proposed Operations: none

This area should remain as an open network of drainage-ways and wildlife corridors.

c) Pw6 Ps3 OC1
Age - 37 years
8.1 ha

- most of the Scots pine is standing dead or has fallen due to Diplodia pinea/Sphaeropsis sapinea
- the remaining white pine is healthy and has plenty of growing space
- well developed understory of white ash

Proposed operations: none

d) Pr6 Sn4
Age - 37 years
10.1 ha

- there are three sections in this stand - most areas are well stocked and have no regeneration
- the west section was fourth row thinned in 1978/79 and in some cases an adjacent row was also removed to provide access in areas where refills occurred between rows
- the east section was planted in a complicated species/row pattern that combines single alternate rows with some double rows
- some thinning has occurred in the red pine rows but there are as many as seven rows between thinned rows - this section contains more than 30% spruce sawlogs
- the central section has a much lower stocking level, due to poor survival and growth in the spruce

Proposed Operations:

In General - this stand is overstocked and requires thinning to:

i) increase growth and quality of crop trees
ii) improve access for future thinnings
iii) improve light infiltration to induce natural regeneration - white ash rows should be left to provide a seed source
iv) improve wildlife habitat - a few brush piles should be established

West Section Pr6 Sn4 2.4 ha

Selective thinning should favour dominants as crop trees with a Sn > Pw > Pr species hierarchy for the residual stand. Up to 35% of the stems including all poor quality trees should be removed, leaving a residual basal area of approximately 26 m2/ha.

East Section Sn5 Pr4 Aw1 5.0 ha

The middle row of pine should be removed from the groups of unthinned rows. The spruce are doing well and selection in the remaining rows should maintain the dominant spruce as crop trees. The residual basal area should be approximately 26 m2/ha.

Central Section Pr7 Sn2 Aw1 2.7 ha

The spruce rows should be removed and some selective thinning should be conducted in the pine. Since stocking is low only the poorest quality pine should be removed and basal area should be maintained at 22 m2/ha.

e) PF Pj5 Cr5 - the juniper regeneration was refilled with jack pine in 1979
Age - 10 - 20 years - this shallow, severe site will only support stunted trees and sparse ground vegetation
2.0 ha

Proposed Operations: none

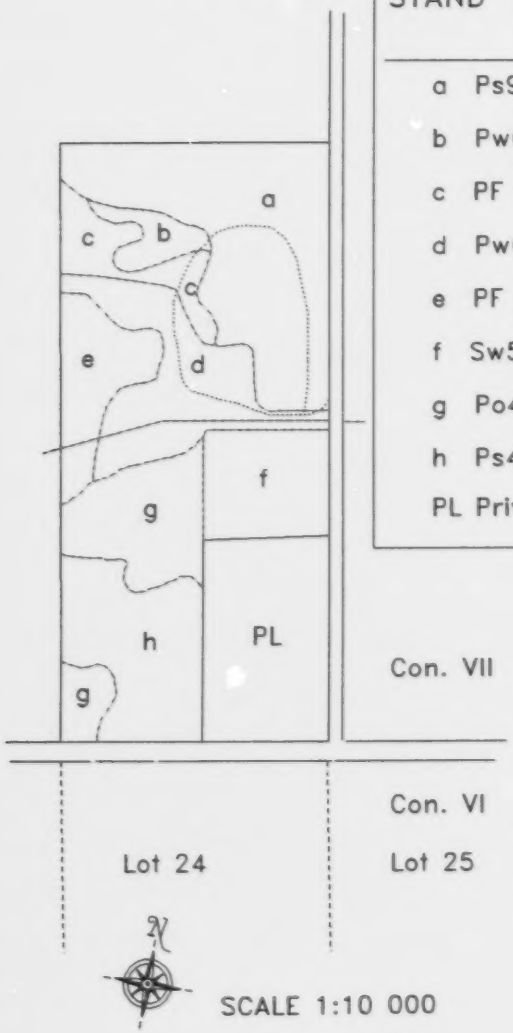
The established vegetation should be maintained for site and habitat protection.

SAVAGE TRACT

CROWN LAND Compartment 19

Pt.Lot 24, Con. VII
Beverley Township
Hamilton–Wentworth Region
29 Hectares

STAND	SPECIES COMP.	AREA (Ha)
a	Ps9 OC1	8.0
b	Pw6 Aw4	1.0
c	PF Id7 Mh2 Aw1	2.0
d	Pw6 Ps3 Sw1	4.4
e	PF Ms4 Aw3 Ob1 Bd1 Po1	2.8
f	Sw5 Pw5	3.0
g	Po4 Pw2 Aw1 Sw1 Ce1 La1	3.6
h	Ps4 Pw4 Sw2	4.2
PL	Private Land	



SCALE 1:10 000

SAVAGE TRACT

The Savage Tract contains a number of pine plantations with some lowland hardwood areas to the east part of the property.

The northern half of the tract is well accessed by a road loop (.46 km). A pipeline easement running east/west provides access through the center of the property.

Stand Type		Stand Description
a)	Ps9 OC1 Age - 28 to 33 years 8.0 ha	- the western 2 ha of this stand is situated on shallow soils that support an open stand of slow growing Scots pine - those areas with a complete overstory have fully stocked understories of hard maple and white ash (0.5-3.0m) - there are many openings that have been invaded with prickly ash and trembling aspen - the remaining area to the west is almost fully stocked to Scots pine - white ash regeneration is well established in the southern end

Proposed Operations:

The 6 hectares of Diplodia pinea/Sphaeropsis sapinea infested Scots pine to the east should be clear cut and sold as pulp, chips or other ground wood products. Post cut supplemental planting of white pine and Norway spruce may be required to increase the stocking of the natural regeneration.

No operations are planned for the shallow western section of this stand.

b)	Pw6 Aw4 Age - 33 years 1.0 ha	- small stand of scattered white pine with a dense understory of prickly ash

Proposed Operations: none

c)	PF Id7 Mh2 Aw1 Age - 79 years 2.0 ha	- poor quality open-grown hardwoods with an understory of hawthorn and prickly ash

Proposed Operations: none

This area contains plenty of food and cover for many wildlife species.

d) Pw6 Ps3 Sw1
Age - 33 years
4.4 ha

- many open grassy areas
- overstory species occur in clumps in various row combinations
- natural regeneration of white pine and white spruce is abundant in the covered areas
- some strip thinning has occurred
- stocking remains quite low (basal area = 20-24 m2/ha)

Proposed Operations:

(Option 1) Remove the Scots pine, selectively thin the other species and allow the stand to regenerate naturally. The residual basal area should be approximately 15 m2/ha.

(Option 2) Same as Option 1 with supplemental planting of white pine and Norway spruce.

(Option 3) Leave overstory and replant the openings.

(Option 4) Leave stand as is and assess regeneration in 5 to 10 years.

e) PF Ms4 Aw3 Ob1
Bd1 Po1
Age - 64 years
2.8 ha

- lowland site with standing water
- tree quality and volumes have low commercial value

Proposed Operations: none

This area should be maintained as a wetland buffer zone with no operations.

f) Sw5 Pw5
Age - 33 years
3.0 ha

- a healthy stand with various row combinations of pine and spruce and some between row refills of white ash
- crown closure has been reached and no ground vegetation exists

Proposed Operations:

The pine is demonstrating the best volume growth and will likely be best suited for future markets. Thinning should retain the pine as crop trees and aim at reducing the spruce component of the stand. A residual basal area of 25 m2/ha should be left. In areas where the spacing is an even 1.8 m between rows, a one in three row thinning should be conducted with selection in the remaining two rows. This should be aimed at removing spruce rows. In areas where a refill (usually ash) has occurred between rows, one of the outside rows, of the three close together, should be removed along with the adjacent 1.8 m spaced row. The removal of two out of every five rows will establish 4.6m wide access corridors. The pine and remaining spruce will advance to sawlog sizes and the ash will be retained as a seed source.

g) Po4 Pw2 Aw1 Sw1 Ce1 La1
Age - 28-33 years
3.6 ha

- a failed conifer plantation that was invaded by low quality hardwoods and shrubs - growing on a wet site unsuitable for pine and spruce.

Proposed Operations: none

This stand has developed into prime habitat for many wetland wildlife and aquatic species. The land has low timber producing potential and requires no forest operations at this time.

h) Ps4 Pw4 Sw2
Age - 26 to 33 years
4.2 ha

- a stand of poor to well stocked mixed conifers demonstrating poor growth on shallow soils (>30cm over bedrock)
- rows are running east to west and there is no road access.

Proposed Operations:

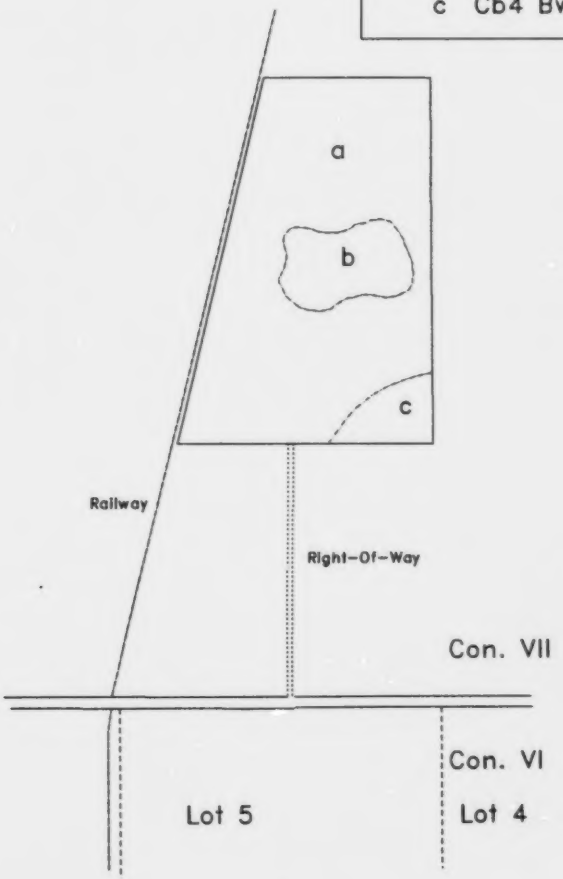
A thinning is necessary to remove the poorer quality material and provide better spacing. All the Scots pine and jack pine should be removed in association with a fourth row thinning. Selection thinning in the remaining rows should favour the white pine and white spruce as crop trees. The entire thinning should remove approximately 40% of the volume and leave approximately 13 m2/ha of basal area. The thinnings will be marketed mainly as pulp and chip products. To access this stand a road should be built from the pipeline to Safari Road along the eastern boundary of the property.

NEWALL TRACT

CROWN LAND Compartment 20

Pt.Lot 5 Con. VII
East Flamborough Township
Hamilton–Wentworth Region
16.2 Hectares

STAND SPECIES COMP.	AREA (Ha)
a Bw5 Ms2 By1 Po1 Aw1	12.6
b Swamp	2.4
c Cb4 Bw3 Po1 Or1 OC1	1.2



SCALE 1:10 000

NEWALL TRACT

The Newall Tract is mainly a lowland hardwood site with Class 4 to 7 wetlands. It is also within a municipally designated E.S.A. (Hamilton-Wentworth #37).

Historically there have been problems obtaining an easement to cross the neighbouring property. The right-of-way had been provided but has since been blocked by the neighbour. Since no other access is available negotiations should be conducted to reopen the right-of-way. Woodlot management activities require this access and no activities are planned until the right-of-way is granted.

Stand Type		Stand Description
a)	Bw5 Ms2 By1 Po1 Aw1 Uneven Aged 12.6 ha	- a low, wet area with alder and dogwood in the understory - some thinning has occurred - an experimental stand of silver maple, European willow, European alder, eastern cottonwood and Jackii poplar was planted in 1970 to the west of Stand c under the direction of Regional Research Forester, H.C. Larsson
b)	Swamp 2.4 ha	- a wet area with willows, cedar, rushes and ferns
c)	Cb4 Bw3 Po1 Or1 Oc1 Uneven Aged 1.1 ha	- a more upland area with rocky soil demonstrating better tree growth

Proposed Operations: None

No operations are planned until access is granted.

TABLE 11-1
CAMBRIDGE DISTRICT CROWN FOREST
PROPOSED CUTTING OPERATIONS 1988- 1989

TRACT	WORKING GROUP	STAND	ALLOCATED AREA (ha)	VOLUME (GT m3) by SPECIES															
				Pr	Pw	Ps	Pj	Sw	Sn	Le	Ne	Oc	Mh	Mm	Aw	Be	Or	Po	Oh	TOTAL
Speyside	hard maple	a	16.3										294.4		36.8				36.8	368.0
	soft maple	b	0.8										10.5	94.6						105.1
Black Creek	hard maple	c	2.9										13.4	4.5		4.5				22.4
Wolverton	red oak	b	2.5												43.3	14.4	43.3	28.9	14.4	144.3
	hard maple	e	3.2										74.3		9.3				9.3	92.9
Grace	hard maple	a	4.5								60.6		121.0			60.6			60.6	302.8
Puslinch	poplar	k	2.8															180.6		180.6
Wilmot	hard maple	a	17.7										489.3			139.8			69.7	698.8
Hyde	white pine	b	5.0	86.6	300.1			118.3	86.6											591.6
	red pine *	c	1.2	61.3		15.8	26.3													103.4
	european larch	d	1.7	101.3				7.2		16.7										125.2
	Scots pine *	e	1.6			26.6														26.6
	white pine	h	2.9	177.9	36.2	87.5														301.6
	red pine	l	5.0	308.8		126.2														435.0
	white spruce	o	3.0					109.2		109.2		54.6								273.0
Kirkwall	white pine	a	10.1		417.2	122.1	62.9		625.9											1228.1
Patterson	Scots pine	a	7.3	112.2	224.5	449.0						112.2								897.9
	red pine	d	10.1	396.6					327.4											724.0
Savage	Scots pine	a	6.0			511.2														511.2
	white pine *	d	4.4		14.1	67.6		14.1												95.8
	white pine	f	3.0		77.4			180.6												258.0
	Scots pine	h	4.2		31.0	127.6														158.6
	TOTAL *		109.0	1183.4	1086.4	1423.6	62.9	415.3	1039.9	125.9	60.6	166.8	1002.9	99.1	89.4	219.3	43.3	209.5	190.8	7419.1
	TOTAL		116.2	1244.7	1100.5	1533.6	89.2	429.4	1039.9	125.9	60.6	166.8	1002.9	99.1	89.4	219.3	43.3	209.5	190.8	7644.9

* not including optional harvest stands

APPENDIX III

HARDWOOD STAND PRESCRIPTION

SILVICULTURAL PRESCRIPTION - Hardwoods

The following general marking guidelines are based on Arborgast (1957) and they expand on some of the prescriptions, for hardwood stands, in Appendix II. These are general guidelines only and are modified by an individual prescription which describes the particular silvicultural features of each stand, the sensitive features and the marking objectives for each individual stand.

A. Fully Regulated Stands

A fully regulated stand recognized by the presence of good quality trees in all diameter classes. All elements os stand structure before cutting will be stocked at or in excess of the recommended stocking shown in Table III and trees larger than the maximum size shown in the table will be present. There will be more than 15.71 square metres of basal area per hectare in trees 25 centimetres d.b.h. and over, more than 1.82 square metres of basal per hectare in trees 5 to 10 centimetres d.b.h.. Consequently there will be more than 21.11 square metres of basal area per hectare in the total stand 5 centimetres d.b.h. and over.

1. Reduce the stand above 25 centimetres d.b.h. to 15.71 square metres of basal area per hectare by removing the poorest trees but leaving adequate stocking in all diameter classes in the residual stand.

2. Reduce the stocking of poles 12.5 to 22.5 centimetres d.b.h. to 3.58 square metres of basal area per hectare, again leaving the best trees well distributed among all sizes represented in the residual stand. Desirable species should be favoured over the less desirable ones and seedlings over sprouts.

3. Reduce the sapling stand to 1.82 square metres of basal area per hectare of desirable species. Seedlings should be favoured over sprouts and the more desirable species favoured over the less desirable ones.

STANDS OVERSTOCKED WITH SAWTIMBER and UNDERSTOCKED WITH SAPLINGS and POLES

B. In this type of stand only the prescribed level of stocking in the saw-log classes is considered. The sawtimber portion of the stand should be reduced to 15.71 square metres of basal area per hectare. The existing poles should be carefully scrutinized, and those that will not produce quality timber in the future should be removed regardless of the prescribed stocking levels. No marking is to be carried out in the saplings or reproduction. Groups of sawlog trees may be removed to create openings up to .1 hectare in size, or existing openings may be enlarged to encourage ingrowth of regeneration of saplings. In some instances where this type of release is carried out, stocking may fall below the prescribed level.

C. When a stand is overstocked in poles and deficient in sawtimber, the total stocking of intermediate and larger trees in Table III is used as a guide. This stock should be reduced to 19.29 square metres of basal area per hectare as recommended for poles and sawtimber.

a. Remove cull and defective overstory trees, but do not cut any good growing stock in the overstory.

b. Reduce the stand to the desired stocking by cutting in the polesized portion of the stand to favour the better growing stock.

Table III - 1

Regulated Stand

Diameter at breast Height (Centimetres)	:Desirable :After Cutting :Tree : Basal Area		:Diameter :at breast (Centimetres)	:Desirable Stand :After Cutting :Trees : Basal Area	
	Number	Square Metres		Number	Square Metres
4	280	.36	36	9	.92
6	150	.42	38	8	.90
8	111 (600)	.56 (1.81)	40	7	.88
10	59	.47	42	7 (47)	.97 (6.31)
			44	6	.91
12	39	.44	46	5	.83
14	31	.48	48	5	.90
16	27	.54			
18	23 (174)	.58 (4.07)	50	4	.78
20	20	.63	52	4	.85
22	18	.68	54	4 (21)	.92 (4.93)
24	16	.72	56	3	.74
			58	3	.79
26	14	.74	60	3	.85
28	13	.80			
30	12 (60)	.85 (4.18)	Total 902		
32	11	.88			
34	10	.91			

Table III - 2

Summary of Desirable Stocking

Tree Size	: Normal : D.B.H. : Range	: Recommended : Stocking
	cm	Square Metres
Sawtimber	25+	15.42
Poles	12-24	4.07
Saplings	4-10	1.82

APPENDIX IV

ACTUAL CUT 1988 -1993

Appendix IV
CAMBRIDGE DISTRICT CROWN FOREST
Actual Cut 1988- 1993 (Cubic Metres)

Tract	Stand	#	Area	Pw	Pr	Ps	Pj	Sw	Le	Oc	Mh	Ms	Or	Ow	Bd	Aw	Ab	Cb	Po	LBl	Oh	Revenu

APPENDIX V

RECORD OF IMPROVEMENT

OPERATIONS 1988 - 1993

Appendix V
Record of Improvement Operations 1988-1993

Tract	Operation	Hectares or Kilometres	Cost

APPENDIX VI

DISTRICT POLICY ON RECREATIONAL USE OF AGREEMENT FORESTS AND CROWN LAND

Ministry of Natural Resources
Ontario

CAMBRIDGE DISTRICT

Subject	Effective Date:
Recreational Use on Agreements Forests, Crown Land	April 1, 1988
New ☒ Revision ☐	Replaces (directive title & date)

1.0 PHILOSOPHY OF USE

The Ministry has an objective:

"to provide and encourage a wide vareity of outdoor recreational opportunities".

On Agreement Forests and Crown land, the Ministry achieves this by advocating multi-use in an unstructured and undeveloped environment. Common uses include but are not limited to: horseback riding, cross-country skiing, hunting, nature study, hiking and snowmobiling. The public must appreciate that these properties are used by many different interest groups to the extent that conflicts can occur, and the optimum experience for any one user group (hiker, hunter) may not be achieved. Users seeking this optimum experience may find that other public properties with structured programs (Conservation Areas) or private lands are better suited to their interests. Snowmobiles are permitted in some areas, as specifically posted.

Generally, the Ministry will not authorize the following types of uses:

- vehicular traffic (automobiles, A.T.V.'s, motorcycles),
- camping, littering,
- open fires,
- unregulated target practice.

Groups wishing to host a regulated target practice on any property will be required to obtain special permission (agreement form).

1.1 CONFLICTS OF USE

Agreement Forests

Restrictions or prohibitions on use are the decision of the landowner (municipality or conservation authority). In instances where the landowner has received a request or complaint to restrict or prohibit a recreational use, the Ministry will provide advice on:

- the nature, type and extent of conflicting uses (M.N.R. may choose to undertake a user survey),
- impact of restrictions on the achievement of M.N.R. objectives,
- the details of the complaint (M.N.R. may need to investigate and discuss with complaining parties),
- options for segregating or restricting the uses on the site,
- ensuring all affected parties have an opportunity to discuss the issue with the landowner.

The landowner may wish to support its decision via a by-law which can then be enforced by the appropriate enforcement agency.

... /2

The Ministry recognizes that conflicts between different user groups sometimes develop. When permission to intensify the uses (such as developing a cross-country ski trail) or undertake special uses is requested, potential conflicts with other users will be considered. District staff may, through normal management duties, identify potential conflicts between uses, or potential damage to the forest environment caused by existing heavy use. In a proactive manner, the District may see the need to explore options for reducing the conflicts before discussing the issue with the landowner. In these cases, the management forester will convene appropriate program representatives, to discuss approaches. User surveys would be considered when there is significant evidence of conflicts between users.

Crown Land

The Ministry recognizes that conflicts between different user groups sometimes develop. District staff may, through normal management duties, identify potential conflicts between uses, or potential damage to the forest environment caused by existing heavy use. In undertaking management planning for these properties, the District may see the need to undertake user surveys and explore options for reducing conflicts.

Where requests to prohibit or restrict uses on Crown properties are received, the Ministry, before making a decision, will:

- examine and investigate the nature, type and extent of conflicting use,
- evaluate the impact on achievement of M.N.R. objectives,
- consider options for segregating or restricting the uses on the site, if necessary,
- give affected parties an opportunity to voice their concerns.

Because of the trend to decreased opportunities for hunting on private land and other public land, the District may wish to give this recreational pursuit a priority. Special uses or restricted uses will be addressed through the management planning process.

2.0 PERMISSIONS FOR SPECIAL USE

Agreement Forests

All requests for special uses (retriever trials, car rallies, etc.) should be directed to the Management Forester, who in turn will consult with other program staff for a decision. When permitted, the user should be required to complete an indemnification agreement, subject to discussion and modification with the landowner. The letter of permission for special use should be posted at the property entrance. Note, special permits for certain types of retriever trials may be required from Fish and WIldlife staff, in addition to special use letter of agreement.

... /3

Crown Lands

All requests for special uses (retriever trials, car rallies, etc.) should directed to the program group defined as the manager (see attached list). In consultation with the lands administrator and other program staff, permissions may be given for special uses. The vehicle for the permission is as follows:

exclusive use of tract:	land-use permit
non-exclusive use:	letter of permission

The permission should be posted in a visible location at the site (such as the normal access point).

Front office staff must be notified of any special permissions.

3.0 COMPLAINTS, INQUIRIES, ENFORCEMENT

Enforcement

On Agreement Forests, enforcement issues relate to three general areas:

i) Game and Fish Act violations,
ii) trespass to property violations - uses which are not permitted on Tract (i.e. camping)
iii) rowdyism.

Enforcement responsibilities are as follows:

Game and Fish Act	- M.N.R. Conservation Officers
Trespass to Property	- Municipal Police or by-law enforcement officer
	- M.N.R. will respond if related to hunting, (such as controlled deer hunt)
Rowdyism	- Municipal Police

Complaints and Inquiries

Agreement Forests

Contacts for response to complaints on Agreement Forests should be the following:

1. Enforcement related:

fish & game violations and hunter trespass violations	- C.O. Coordinator
other trespass violations	- Police
rowdyism	- Police

Complaints regarding prohibited uses will be recorded on a complaint form and responded to by police or enforcement staff (hunter trespass only), as required.

Complaints regarding rowdyism should be directed immediately to police, but management forester should be notified of complaint.

Complaints received by the landowner should be recorded and may need to be redirected to the police.

2. Operations and management (permitted uses, garbage, special uses such as retriever trials)
   Contact: management forester - may direct inquiry or response to other program staff (Support Services).

3. User conflicts
   Contact: management forester
   - explain M.N.R. policy of multi-use; if persistent or not satisfied, be directed to the landowner.

4. Landowner
   Contact: management forester - may direct inquiry or response to other program staff.

Crown Land

Enforcement related:

Game and Fish Act	C. O. Coordinator
Rowdyism	Police

Operation and Management related (permitted uses, garbage, special uses)
Contact: User group responsible * - may direct inquiry or response to other program staff (i.e. Support Services)

General inquiries on Crown land
Contact: Lands Administrator

4.0 LIABILITY AND PUBLIC SAFETY ON AGREEMENT FORESTS

The Ministry has stated as a general policy that it:

> "will promote the safe pursuit of outdoor recreation and resource production activities".

On Agreement Forests, M.N.R. is deemed to be the "Occupier" under the Occupier's Liability Act. According to Section 4 of this Act, non-paying recreational entrants on these properties assume their own risks. So long as the occupier does not intentionally create a danger for entrants or engage in an activity likely to bring serious injury to an entrant, he will not be liable to a non-paying recreational entrant on his land.

---

* contact person for user group for each property is defined by quick reference handout available at front office

However, in light of the above, the Ministry has a duty to take "reasonable" care regarding conditions and activities on the Agreement Forest.

In implementing the above policy on Agreement Forest, the Ministry will:

1. Identify by means of a sign(s) any known physical dangers (i.e. deep water). Notify users that use of internal roads are at their own risk.

2. Undertake forest management operations in a safety conscious manner. Visitors to the forest (hikers, hunters) should be notified that forest management operations are in progress.

3. Post signs advising users of the range of activities permitted and not permitted on the forest.

4. Increase the awareness of users of the presence of other users.

J. J. McFadden
District Manager
Cambridge District

APPENDIX VII

LETTER TO REGIONAL DIRECTOR REGARDING SURPLUS LANDS

August 12, 1988

MEMORANDUM TO:

Regional Director
Central Region

SUBJECT: Identification and Disposition
Lands that are Surplus to M.N.

Further to your memo on the above noted subject our District fully supports the concept and thrust of the last Speech from the Throne identifying the governments desire to closely review its land holdings.

To this end Cambridge District is currently preparing a Resource Management Plan for the Crown land managed by Forest Management. One aspect of this plan will be to identify properties which may be surplus to their program. We will also be preparing a system in which other land holdings, managed by other services, can be ranked to determine whether or not they should be surplus. This process may take longer than the deadline date established in your memo of July 29, 1988.

Coincidentally we will be identifying the Freeport Tract (72 acres) surplus to our needs within the next week or two. This property is currently landlocked and floodplain. It may therefore better serve the Regional Municipality of Waterloo or the Grand River Conservation Authority in achieving some of their mandates.

Please feel free to call Mr. M. Belcher at our office if you wish to discuss this further.

Original Signed By
J. J. McFADDEN

J. J. McFadden
District Manager
Cambridge District

(519) 658-9355

MB/rjb

bcc: C. Selby, Cambridge District
B. DeGunst, Cambridge District
S. Yorgan, Cambridge District
T. Harvey, Cambridge District

APPENDIX VIII

INTEGRATED RESOURCE MANAGEMENT GUIDELINES

PUSLINCH CROWN RESOURCE MANAGEMENT AREA

INTEGRATED RESOURCE MANAGEMENT GUIDELINES

PUSLINCH CROWN RESOURCE MANAGEMENT AREA

The purpose of this guideline is to provide general direction on the management and operation of the Puslinch Crown Resource Management Area during its extended period of interim use.

MANAGEMENT OBJECTIVES:

1. To ensure a maximum contribution to the achievement of Ministry objectives and targets as identified by the District Land Use Guidelines, as follows:

   - apply the concept of multiple-use of land to maximize resource benefits (forest products, mineral aggregates, fish and wildlife management) from the property
   - provide and encourage a wide variety of outdoor recreational opportunities

2. To manage in accordance with and to demonstrate the principles of integrated resource management.

IMPLEMENTATION

1. The Lands Administrator will act as the property manager and will be responsible for operations and day to day management of the property, including responding to public inquiries, requests for special uses and complaints.

   Regular maintenance (garbage collection signs) will be funded through the normal Support Services budget (which covers all of M.N.R. managed properties). Additional work (fencing, road construction, ponds, etc.) must be identified through work program planning in consultation with the Lands Administrator.

2. Forest management operations will be guided by a forest management plan and operating plan for Crown land (5 year plan).

3. The extent and nature of extractive operations are defined by an approved Environmental Assessment for lots 6 & 7. This includes, when necessary, appropriate consultation with the municipality and M.T.O. through the Puslinch Technical Advisory Committee.

4. Problems and conflicts relating to recreational use (permissions for special use, liability, enforcement) will be governed by the District policy on Recreational Use of Agreement Forests and Crown Land.

5. Existing management activities are defined on the attached diagram. Annual plans for these management activities, or, proposals for new management activities (new wildlife plantings, research plots, or special events) must be reviewed with the property manager to ensure co-ordination and integration of all activities on the property.

PUSLINCH CROWN RESOURCE MANAGEMENT AREA